T-MOBILE NORTHEAST LLC

SITE NUMBER: 7WAW369G
SITE NAME: MONCURE WT
T-MOBILE NSD, DESIGN 797DB LARGE

77 STAFFORDBORO BLVD
STAFFORD, VA 22556
STAFFORD COUNTY

811 Know what's below. Call before you dig.

SITE INFORMATION

SCOPE OF WORK:	PROJECT CONSISTS OF INSTALLING PROPOSED TELECOMMUNICATIONS EQUIPMENT INCLUDING CABLING AND ANTENNAS MOUNTED ON STACKABLE POD MOUNT ON TOP OF THE EXISTING WATER TANK AT A PROPOSED TELECOMMUNICATIONS SITE FOR T-MOBILE.
PROJECT DESIGN:	797DB LARGE
SITE ID NUMBER:	7WAW369G
911 SITE ADDRESS:	77 STAFFORDBORO BLVD STAFFORD, VA 22556
LATITUDE (NAD 83): LONGITUDE (NAD 83):	38.47635° -77.41142°
JURISDICTION: ZONING:	STAFFORD COUNTY R3
USE & OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	IIB
TAX ACCOUNT NUMBER: PARCEL AREA: PARCEL OWNER: ADDRESS:	21-65J 0.51± ACRES BOARD OF SUPERVISORS OF STAFFORD COUNTY PO BOX 339 STAFFORD, VA 22555
GROUND ELEVATION:	100'± (AMSL)
STRUCTURE TYPE: STRUCTURE HEIGHT:	WATERTANK 117.5' (AGL)

PROJECT TEAM

APPLICANT:	T-MOBILE NORTHEAST LLC 12050 BALTIMORE AVENUE BELTSVILLE, MD 20705 OFFICE: (240) 264-8600 FAX: (240) 264-8610
PROJECT MANAGEMENT FIRM:	NETWORK BUILDING + CONSULTING, LLC. 6095 MARSHALEE DRIVE, SUITE 300 ELKRIDGE, MD 21075 (410) 712-7092
ENGINEERING FIRM:	NB+C ENGINEERING SERVICES, LLC. 6095 MARSHALEE DRIVE, SUITE 300 ELKRIDGE, MD 21075 (410) 712-7092

VICINITY MAP

DIRECTIONS

FROM: 12050 BALTIMORE AVENUE, BELTSVILLE, MD 20705.DEPART US-1 / BALTIMORE AVE TOWARD AMMENDALE RD. TURN LEFT ONTO MD-212 / POWDER MILL RD EXXON ON THE CORNER. TURN RIGHT ONTO MD-201 / EDMONSTON RD. TAKE RAMP RIGHT FOR I-495 SOUTH / I-95 SOUTH TOWARD ANDREWS AFB / RICHMOND VA. AT EXIT 7A-B, TAKE RAMP RIGHT FOR MD-5 SOUTH TOWARD WALDORF. KEEP STRAIGHT ONTO US-301 S / MD-5 S. ARRIVE AT 2185 CRAIN HWY, WALDORF, MD 20601.

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

- 2012 INTERNATIONAL BUILDING CODE
- 2011 NATIONAL ELECTRICAL CODE
- 2012 NFPA 101, LIFE SAFETY CODE
- 2012 IFC
- AMERICAN CONCRETE INSTITUTE
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION
- MANUAL OF STEEL CONSTRUCTION 13TH EDITION
- ANSI/TIA-222-G
- TIA 607
- INSTITUTE FOR ELECTRICAL & ELECTRONICS ENGINEER 81
- IEEE C2 NATIONAL ELECTRIC SAFETY CODE LATEST EDITION
- TELECORDIA GR-1275
- ANSI/T 311

DRAWING INDEX

DO NOT SCALE DRAWINGS

THESE DRAWINGS ARE FORMATTED TO BE FULL-SIZE AT 24"X36". CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE DESIGNER / ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR MATERIAL ORDERS OR BE RESPONSIBLE FOR THE SAME. CONTRACTOR SHALL USE BEST MANAGEMENT PRACTICE TO PREVENT STORM WATER POLLUTION DURING CONSTRUCTION.

ENGINEER

NB+C TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.
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DESIGN RECORD

REVISIONS

REV	DATE	DESCRIPTION	BY
1	08/12/16	REVISED DESIGN	RNC
0	07/27/16	FINAL	JTD

PROFESSIONAL STAMP

COMMONWEALTH OF VIRGINIA
SASSAN ZARABI
Lic. No. 049689
PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 049689, EXPIRATION DATE 12/31/2017

ENGINEER

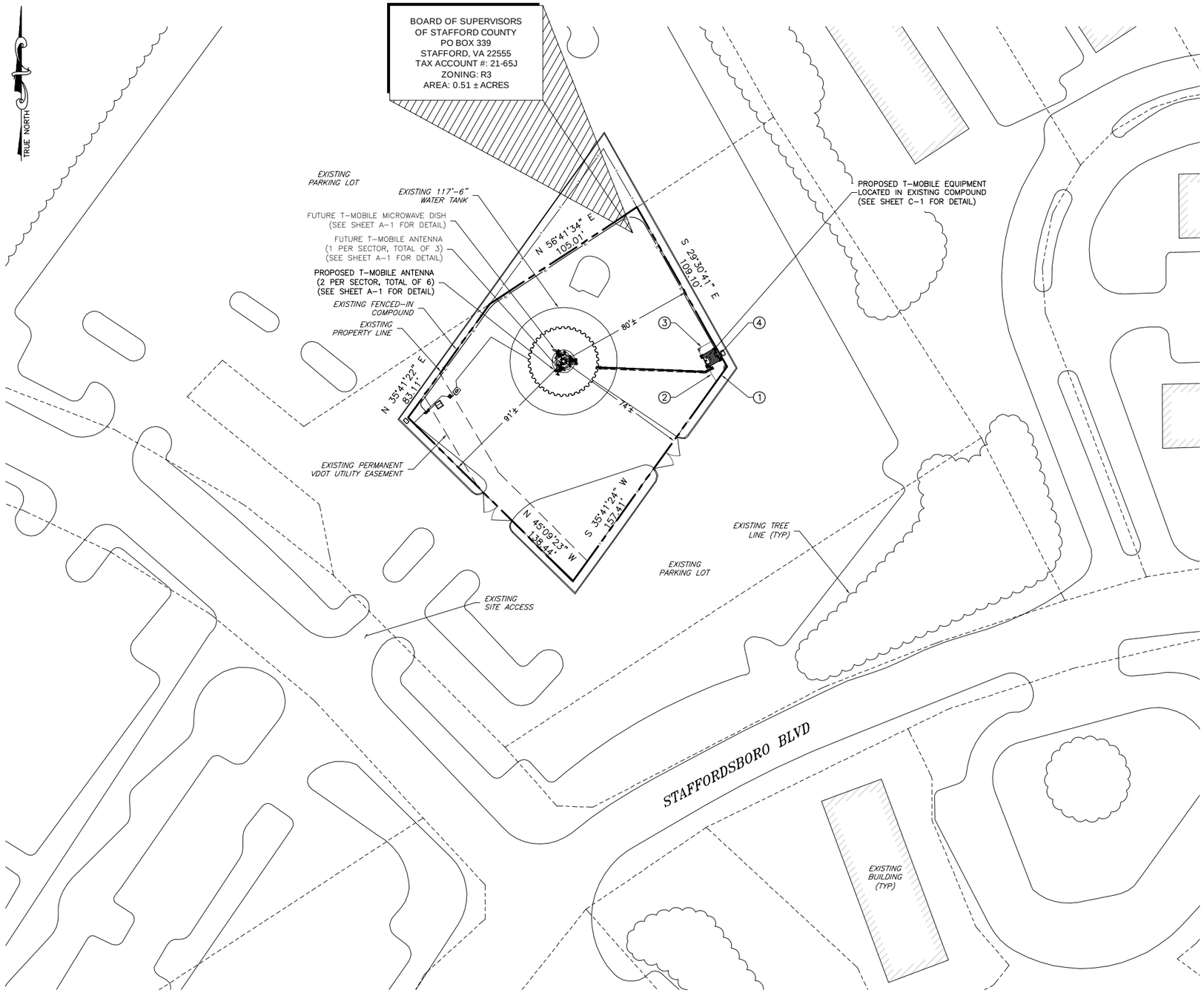
SASSAN ZARABI, P.E.
VA PROFESSIONAL ENGINEER LIC. #049689

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



1 / Z-1 SITE PLAN
SCALE: 1" = 30'

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FEET

ZONING INFORMATION

JURISDICTION: STAFFORD COUNTY

ZONING: R3

DIMENSION	EXISTING ±	PROPOSED ±
FRONT YARD SETBACK:	NO CHANGE	91'
SIDE YARD SETBACK:	NO CHANGE	74'
REAR YARD SETBACK:	NO CHANGE	80'

LOT AREA: 0.51 ± ACRES

(ALL MEASUREMENTS ARE IN FEET ± UNLESS OTHERWISE NOTED)

NOTES:

1) SITE PLAN IS NOT THE RESULT OF A SURVEY. IT IS BASED ON FIELD MEASUREMENTS AND SCALED ASSESSORS MAPS AVAILABLE. ALL INFORMATION SHOWN IS APPROXIMATE ONLY AND SUBJECT TO ANY CONDITION THAT A SURVEY MAY REVEAL.

2) ALL SETBACKS SHOWN ARE FROM EXISTING TOWER TO EXISTING PROPERTY LINES.

LEGEND

- PROPERTY LINE – SUBJECT PARCEL
- PROPERTY LINE – ABUTTERS
- EXISTING FENCE LINE
- EXISTING ROAD
- EXISTING BUILDING

T-MOBILE LEASED SPACE
DIMENSION/BEARING INFORMATION

LINE	BEARING	DISTANCE
L1	S35°41'24"W	11.02'
L2	N29°30'41"W	22.62'
L3	N60°29'19"E	10.00'
L4	S29°30'41"E	18.00'

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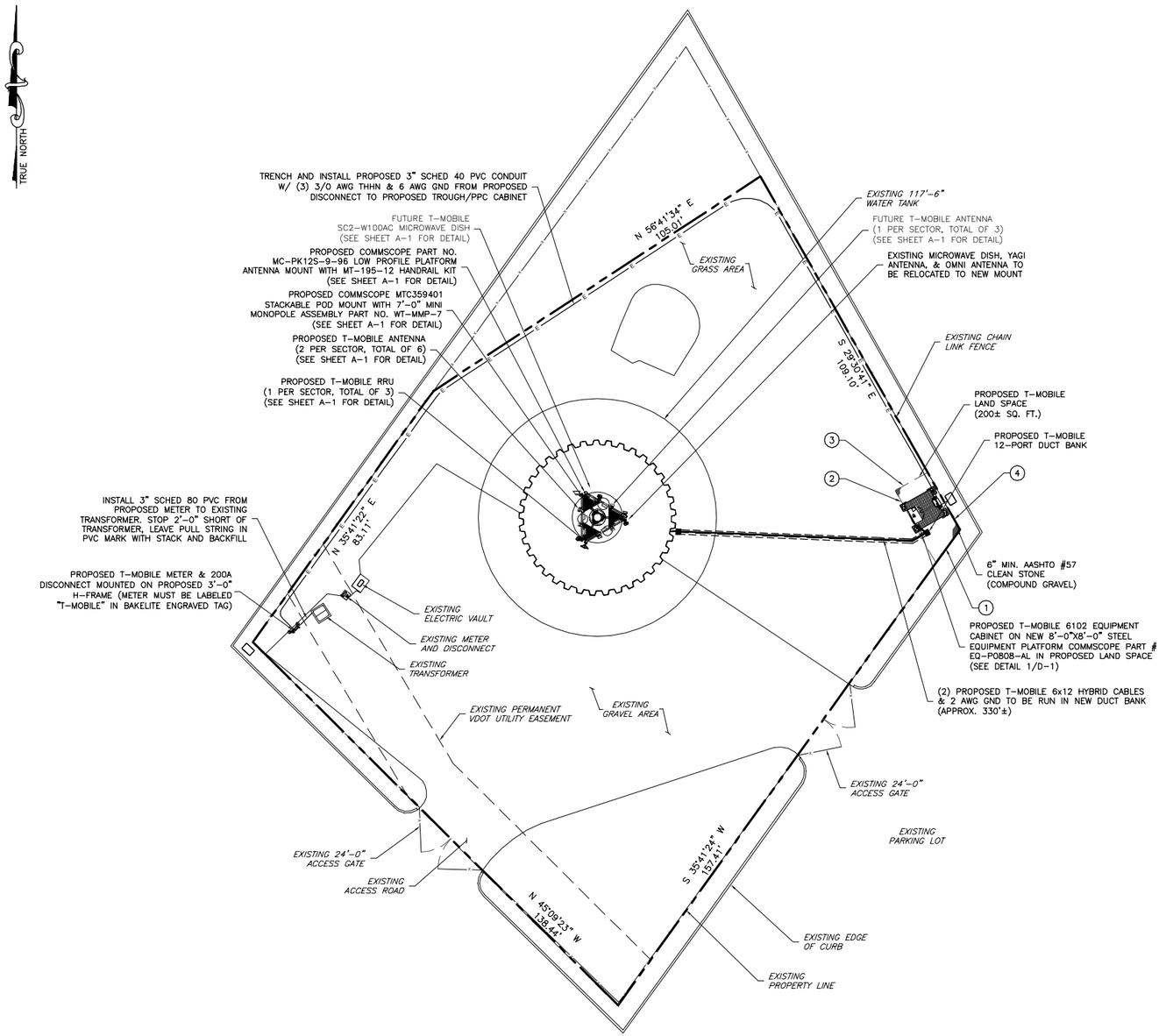
SHEET TITLE

SITE PLAN

SHEET NUMBER

Z-1



1 C-1 COMPOUND PLAN
SCALE: 1" = 16'

GRAPHIC SCALE
16 0 8 16 32 64
(IN FEET)
1 INCH = 16 FEET

GENERAL NOTES

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES COMPANY OR OTHER PUBLIC AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR THE OVERALL INTENT OF THESE DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.
5. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEERING PRIOR TO INSTALLATION.
8. TRANSMITTER EQUIPMENT AND ANTENNAS ARE DESIGNED TO MEET ANSI/EIA/TIA 222-G REQUIREMENTS.
9. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
10. CONTRACTOR SHALL MAKE A UTILITY "ONE CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
11. IF ANY UNDERGROUND UTILITIES OR STRUCTURES EXIST BENEATH THE PROJECT AREA, CONTRACTOR MUST LOCATE IT AND CONTACT THE APPLICANT & THE OWNER'S REPRESENTATIVE.
12. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION BY TECHNICIANS APPROXIMATELY 2 TIMES PER MONTH.
13. PROPERTY LINE INFORMATION WAS PREPARED USING DEEDS, TAX MAPS, AND PLANS OF RECORD AND SHOULD NOT BE CONSTRUED AS AN ACCURATE BOUNDARY SURVEY.
14. THIS PLAN IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
15. THE PROPOSED FACILITY WILL CAUSE ONLY A "DE MINIMIS" INCREASE IN STORMWATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
16. NO SIGNIFICANT NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
17. THE FACILITY IS UNMANNED AND NOT INTENDED FOR HUMAN HABITATION (NO HANDICAP ACCESS REQUIRED).
18. THE FACILITY IS UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
19. POWER TO THE FACILITY WILL BE MONITORED BY A SEPARATE METER.

STRUCTURAL NOTE:
THE STRUCTURAL ANALYSIS OF THE PROPOSED POD MOUNT AND ITS CONNECTION TO THE EXISTING WATER TANK HATCH FLANGE PERFORMED BY NB+C, PROJ. # 27231, DATED 06/21/2016

STRUCTURAL NOTE:
THE STRUCTURAL EVALUATION OF THE EXISTING WATER TANK WITH THE EXISTING AND PROPOSED LOADS WAS PERFORMED BY CB&I INC. ORIGINAL PDM CONTRACT #56119 DATED 07/20/16.

T-MOBILE LEASED SPACE DIMENSION/BEARING INFORMATION

LINE	BEARING	DISTANCE
L1	S35°41'24"W	11.02'
L2	N29°30'41"W	22.62'
L3	N60°29'19"E	10.00'
L4	S29°30'41"E	18.00'

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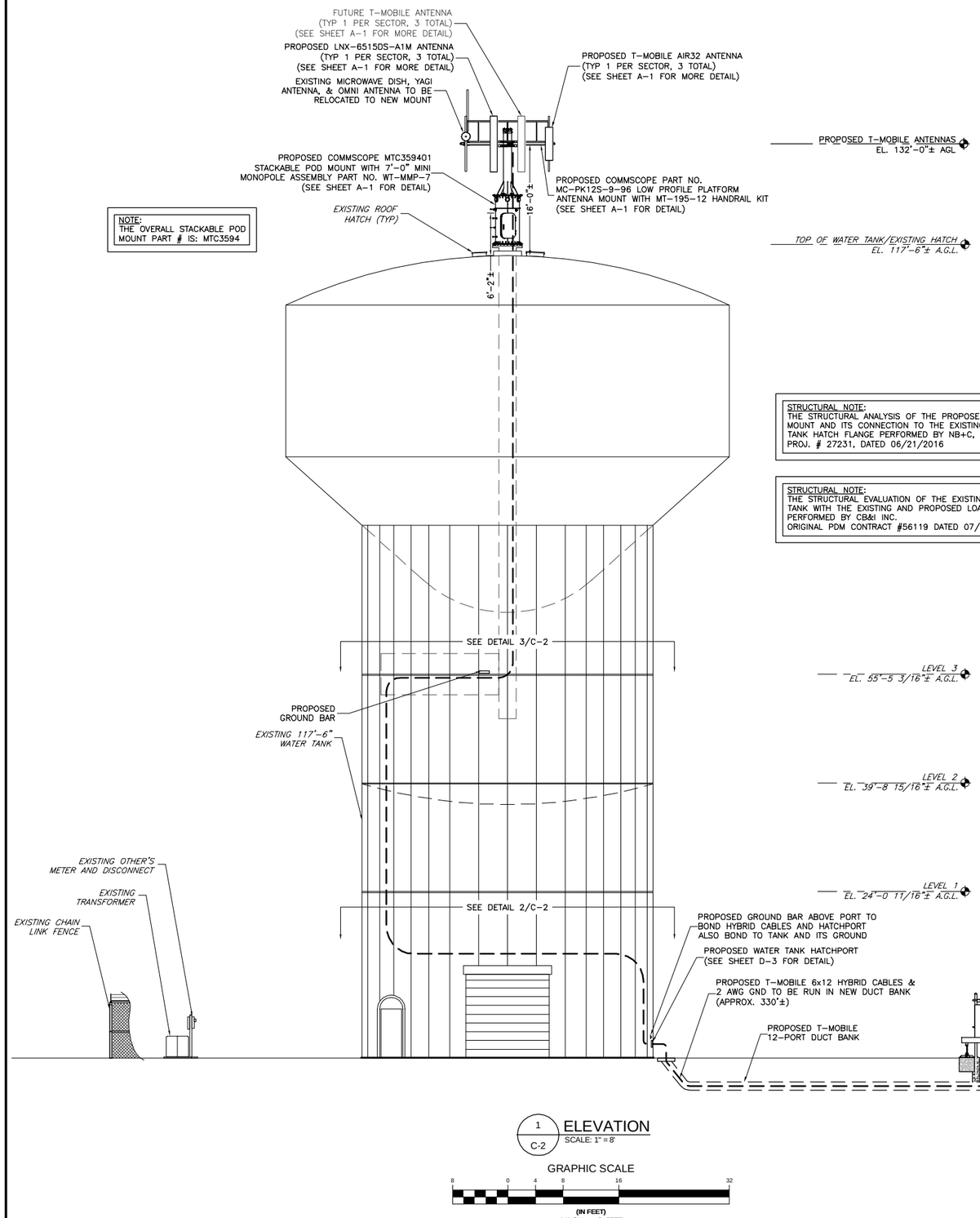
VA PROFESSIONAL ENGINEER LIC. #049689

SHEET TITLE

COMPOUND PLAN

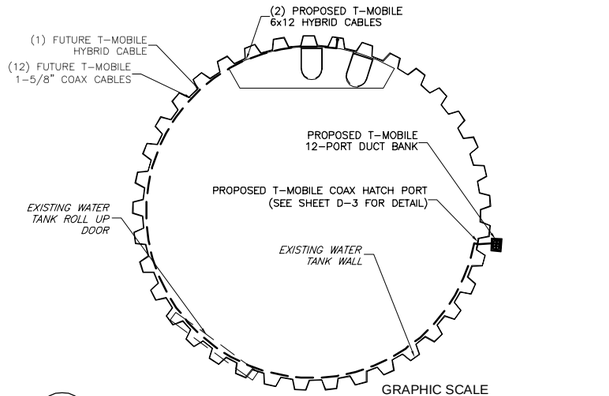
SHEET NUMBER

C-1



1 C-2 ELEVATION
SCALE: 1" = 8'

GRAPHIC SCALE
8 0 4 8 16 32
(IN FEET)
1 INCH = 8 FEET



2 C-2 GROUND LEVEL
SCALE: 1" = 8'

GRAPHIC SCALE
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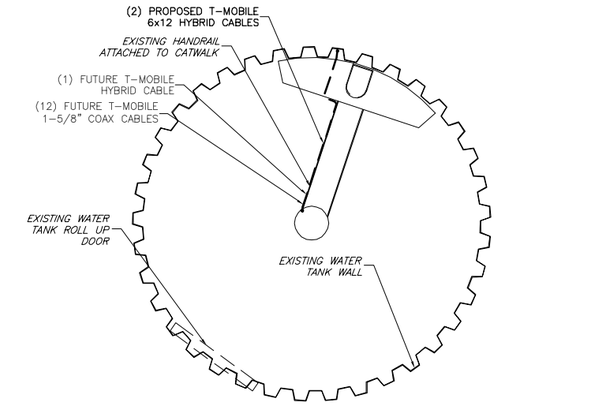
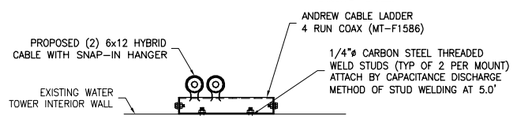
(IN FEET)
1 INCH = 8 FEET

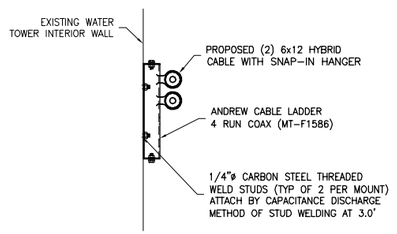


3 C-2 LEVEL 3
SCALE: 1" = 8'

GRAPHIC SCALE
8 0 4 8 16 32
(IN FEET)
1 INCH = 8 FEET



4 C-2 WATER TOWER COAX MOUNT
NTS



5 C-2 WATER TOWER COAX MOUNT
NTS

TRUE NORTH

ENGINEER

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VA PROFESSIONAL ENGINEER LIC. #049689

SHEET TITLE

ELEVATION

SHEET NUMBER

C-2

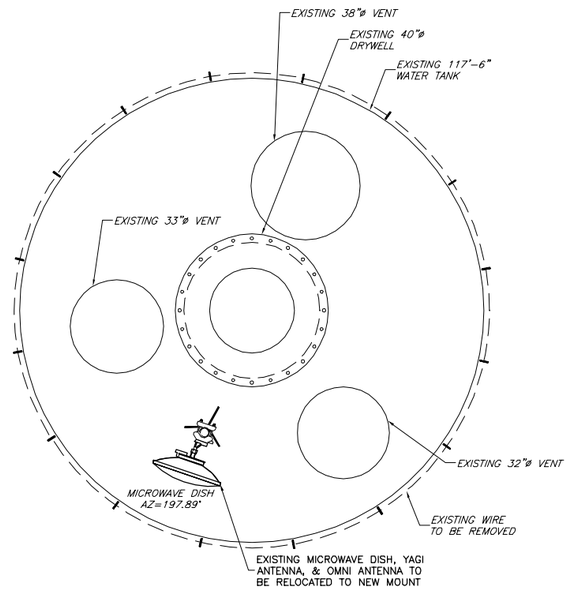
ANTENNA SCHEDULE

SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA DIMENSIONS (HxWxD)	MECHANICAL DOWNTILTS	ELECTRICAL DOWNTILTS	RAD CENTER	AZIMUTH	TMA/RRU QUANTITY & MODEL	CABLE QUANTITY & TYPE	CABLE LENGTH
A1	OPEN	–	–	–	–	–	–	–	–	–	
A2	PROPOSED	ERICSSON	AIR32 DB	56.7"x12.9"x8.7"	0° / 0°	2° / 2°	132'	10°	–	(1) 6x12 HYBRID CABLE	330'±
A3	FUTURE	ERICSSON	AIR21 B4A/B12	96.0"x12.1"x8.7"	–	–	–	–	(2) FUTURE RRU	(4) 1-5/8" COAX CABLE	330'±
A4	PROPOSED	COMMSCOPE	LNX-6515DS-A1M	96.4"x11.9"x7.1"	0°	6°	132'	10°	(1) ERICSSON RRUS11 B12	(1) 6x12 HYBRID CABLE	330'±
B1	PROPOSED	ERICSSON	AIR32 DB	56.7"x12.9"x8.7"	0° / 0°	2° / 2°	132'	160°	–	SHARED HYBRID CABLE WITH ALPHA	–
B2	FUTURE	ERICSSON	AIR21 B4A/B12	96.0"x12.1"x8.7"	–	–	–	–	(2) FUTURE RRU	(4) 1-5/8" COAX CABLE	–
B3	PROPOSED	COMMSCOPE	LNX-6515DS-A1M	96.4"x11.9"x7.1"	0°	6°	132'	160°	(1) ERICSSON RRUS11 B12	SHARED HYBRID CABLE WITH ALPHA	–
B4	*EXISTING*	–	*2' MICROWAVE DISH*	–	–	–	–	–	–	–	–
C1	PROPOSED	ERICSSON	AIR32 DB	56.7"x12.9"x8.7"	0° / 0°	2° / 2°	132'	290°	–	SHARED HYBRID CABLE WITH ALPHA	–
C2	FUTURE	ERICSSON	AIR21 B4A/B12	96.0"x12.1"x8.7"	–	–	–	–	(2) FUTURE RRU	(4) 1-5/8" COAX CABLE	–
C3	PROPOSED	COMMSCOPE	LNX-6515DS-A1M	96.4"x11.9"x7.1"	0°	6°	132'	290°	(1) ERICSSON RRUS11 B12	SHARED HYBRID CABLE WITH ALPHA	–
C4	FUTURE	RFS	SC2-W100AC	26.4"øx11.5"	–	–	132'	0°	(1) AVIAT ODU 600	1/2" LMR-400 COAX CABLE	330'±

NOTES:
1. CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT DATA AT TIME OF CONSTRUCTION.
2. CONTRACTOR TO CONFIRM CABLE LENGTHS PRIOR TO CONSTRUCTION.

COLOR CODING NOTES:

R	RED	GSM
G	GREEN	UMTS 1900
B	BLUE	UMTS AWS
Y	YELLOW	LTE
O	ORANGE	FIBER CABLE



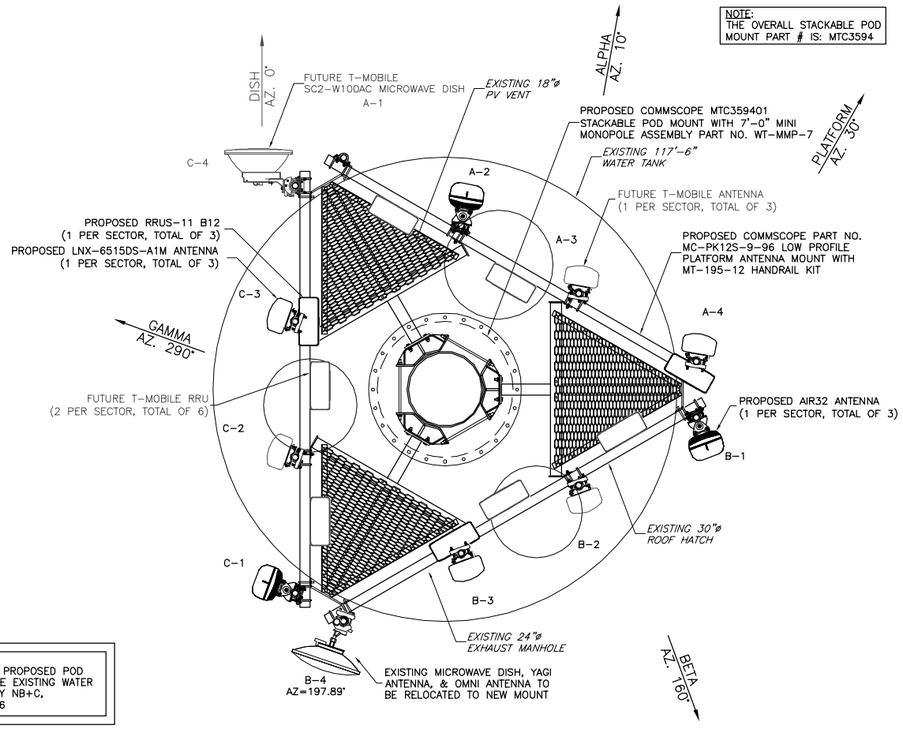
1 A-1 EXISTING ANTENNA ORIENTATION PLAN
NTS

APPROX TRUE NORTH

STRUCTURAL NOTE:
THE STRUCTURAL ANALYSIS OF THE PROPOSED POD MOUNT AND ITS CONNECTION TO THE EXISTING WATER TANK HATCH FLANGE PERFORMED BY NB+C, PROJ. # 27231, DATED 06/21/2016

STRUCTURAL NOTE:
THE STRUCTURAL EVALUATION OF THE EXISTING WATER TANK WITH THE EXISTING AND PROPOSED LOADS WAS PERFORMED BY CB&I INC.
ORIGINAL PDM CONTRACT #56119 DATED 07/20/16.

NOTE:
THE OVERALL STACKABLE POD MOUNT PART # IS: MTC3594



2 A-1 PROPOSED ANTENNA ORIENTATION PLAN
NTS

APPROX TRUE NORTH

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ENGINEER

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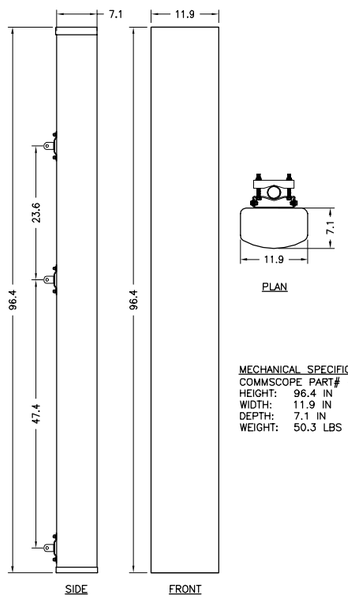
SHEET TITLE

ANTENNA PLAN & SCHEDULE

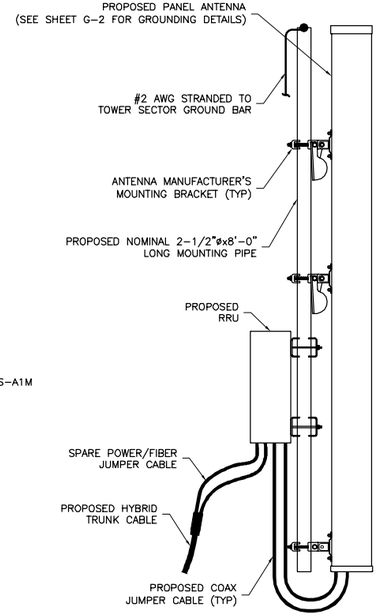
SHEET NUMBER

A-1

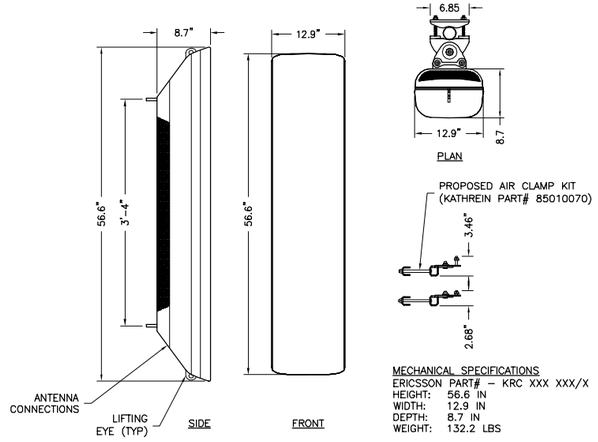


MECHANICAL SPECIFICATIONS
COMMSCOPE PART# – LNX-6515DS-A1M
HEIGHT: 96.4 IN
WIDTH: 11.9 IN
DEPTH: 7.1 IN
WEIGHT: 50.3 LBS

1 A-2 COMMSCOPE PANEL ANTENNA
NTS

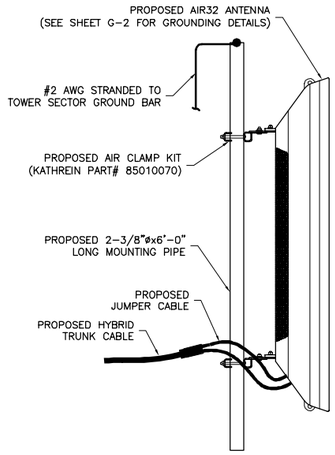


2 A-2 ANTENNA MOUNTING DETAIL
NTS

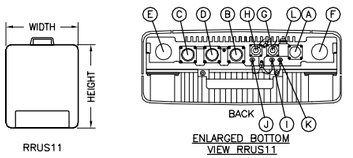


MECHANICAL SPECIFICATIONS
ERICSSON PART# – KRC XXX XXX/X
HEIGHT: 56.6 IN
WIDTH: 12.9 IN
DEPTH: 8.7 IN
WEIGHT: 132.2 LBS

3 A-2 ERICSSON AIR-32DB PANEL ANTENNA
NTS



4 A-2 ANTENNA MOUNTING DETAIL
NTS



SIZE AND WEIGHT TABLE

RRU	WIDTH	DEPTH	HEIGHT	WEIGHT W/O BRACKET
RRUS11 WITH SOLAR SHIELD	17.0"	7.2"	19.7"	50.7 LBS.

MINIMUM CLEARANCE TABLE – INSTALL PER MANUFACTURER SPECIFICATIONS

RRU CABINET	CLEARANCES RRUS01 (INCHES)	CLEARANCES RRUS11 (INCHES)	COMMENTS
FRONT	36"	36"	INSTALLATION ACCESS
REAR	0"	0"	ZERO REAR CLEARANCE IS ALLOWED USING SUPPLIED MOUNTING BRACKETS
RIGHT	8"	0"	AIR FLOW
LEFT	8"	0"	AIR FLOW
ABOVE/TOP	16"	16"	FROM CEILING FOR AIR FLOW (NOTE 1)
BOTTOM	12"	8"	CONDUIT ROUTING/AIR FLOW

CONNECTION INTERFACE

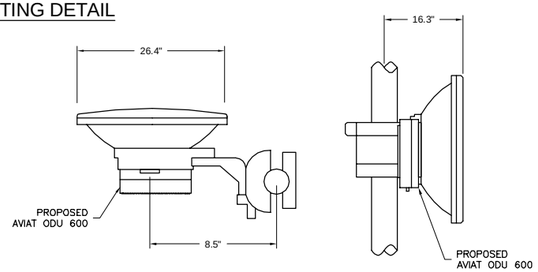
POSITION (ID)	DESCRIPTION	MARKING
A	-48 V DC POWER SUPPLY	
B	LOCAL MAINTENANCE TERMINAL (LMT)	LMT
C	OPTICAL CABLE 1	⊖- 1
D	OPTICAL CABLE 2	⊖- 2
E	ANTENNA 1	A
F	ANTENNA 2	B

POSITION (ID)	DESCRIPTION	MARKING
G	ALD (FOR RET)	ALD
H	EXTERNAL ALARM	
I	CROSS CONNECT RXA	RXA I/O
J	RXA CO-SITE	RXA OUT
K	CROSS CONNECT RXB	RXB I/O
L	EARTH GROUNDING	⏚ EBT

NOTES:

1. DO NOT PAINT THE RRU. RRU SOLAR SHIELD CAN BE PAINTED PER MANUFACTURER'S METHOD OF PROCEDURE.

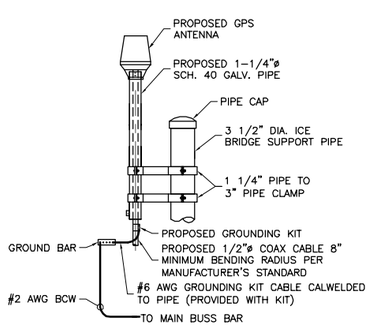
5 A-2 ERICSSON REMOTE RADIO UNIT (RRU)
NTS



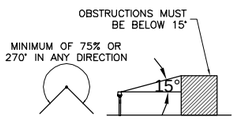
RFS MICROWAVE ANTENNA MODEL NO. SC2-W100AC	
WEIGHT	22.0 LBS.
DIMENSIONS (DIA.)	26.4"
MAX WIND SPEED	155 MPH

AVIAT ODU MODEL NO. 600	
WEIGHT	11 LBS.
DIMENSIONS (HXWXD)	10.4" X 10.4" X 4.9"
POWER	< 40 WATTS

6 A-2 MICROWAVE ANTENNA DETAIL
NTS



7 A-2 GPS MOUNTING DETAIL
NTS



GPS MINIMUM SKY
VIEW REQUIREMENTS

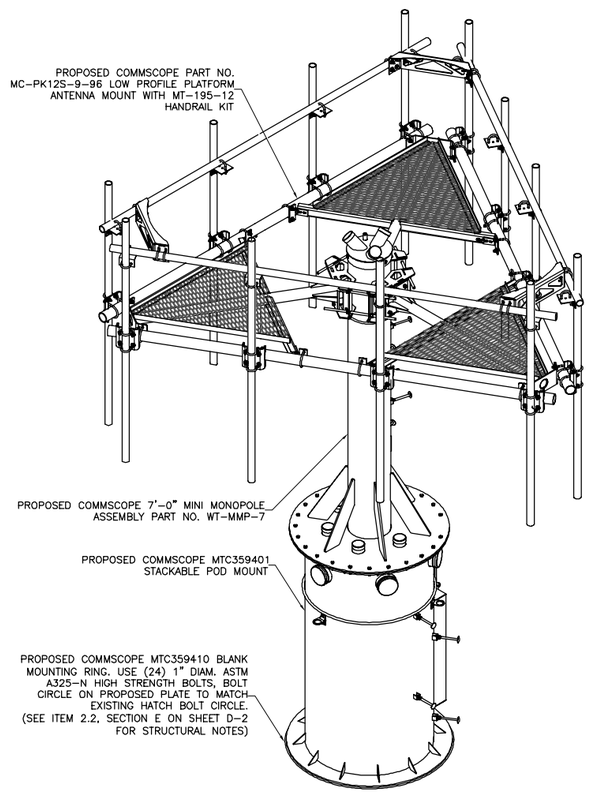
NOTES:

1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.

2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 1-1/4" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 18 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.

3. IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED SUCH THAT IT IS WITHIN 2 DEGREES OF VERTICAL AND THE BASE OF THE ANTENNA IS WITHIN 2 DEGREES OF LEVEL.

4. DO NOT SWEEP TEST GPS ANTENNA.



8 A-2 POD MOUNT DETAIL
NTS

ENGINEER

NB+C
TOTALLY COMMITTED.
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T-MOBILE NORTHEAST LLC
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FAX: (240) 264-8610

SITE INFORMATION

7WAW369A
MONCURE WT
77 STAFFORDBORO BLVD
STAFFORD, VA 22556
STAFFORD COUNTY

DESIGN RECORD

REVISIONS

REV	DATE	DESCRIPTION	BY
1	08/12/16	REVISED DESIGN	RNC
0	07/27/16	FINAL	JTD

PROFESSIONAL STAMP

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 049689, EXPIRATION DATE 12/31/2017

ENGINEER

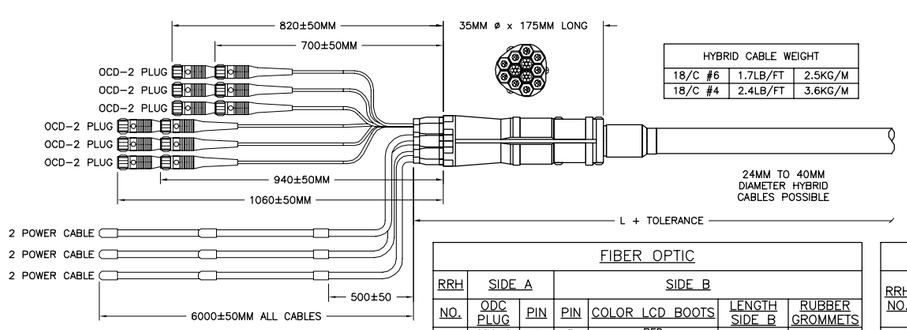
SASSAN ZARABI, P.E.
VA PROFESSIONAL ENGINEER LIC. #049689

SHEET TITLE

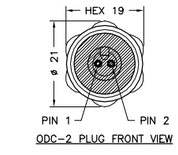
ANTENNA SPECIFICATIONS & DETAILS

SHEET NUMBER

A-2



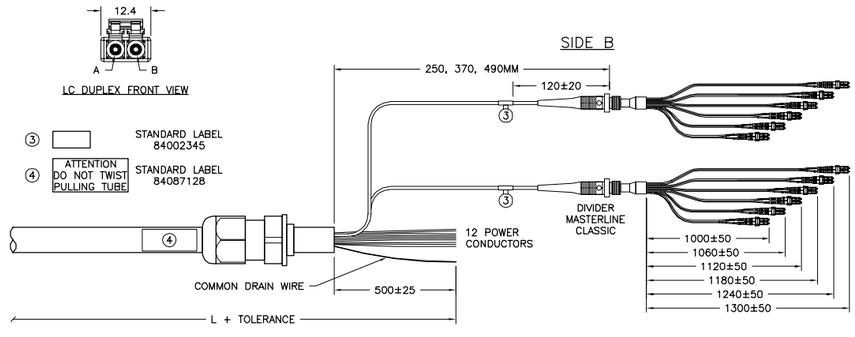
HYBRID CABLE WEIGHT		
18/C #6	1.7LB/FT	2.5KG/M
18/C #4	2.4LB/FT	3.6KG/M



ODC-2 PLUG FRONT VIEW

TOLERANCE	ASSEMBLY LENGTH
+80	L < 5M
+2%	L ≥ 5M

POWER	
LENGTH	DIAMETER
L ≤ 60M	6MM²(10AWG)
L ≥ 60M	10MM²(8AWG)



FIBER OPTIC

RRH NO.	SIDE A ODC PLUG	SIDE A PIN	SIDE B PIN	SIDE B COLOR LCD BOOTS	SIDE B LENGTH	RUBBER GROMMETS
1	ODC-2 RED	1	B	RED (SHORT BREAKOUT)	1000 ± 50	1
		2	A			
2	ODC-2 GREEN	1	B	GREEN	1060 ± 50	
		2	A			
3	ODC-2 BLUE	1	B	BLUE	1120 ± 50	1
		2	A			
4	ODC-2 YELLOW	1	B	RED (SHORT BREAKOUT)	1180 ± 50	
		2	A			
5	ODC-2 WHITE	1	B	GREEN	1240 ± 50	1
		2	A			
6	ODC-2 BLACK	1	B	BLUE	1300 ± 50	
		2	A			

POWER

RRH NO.	REF HOOK UP	SIDE A WIRE COLOR	SIDE A CABLE DESIGNATOR	SIDE B WIRE COLOR
1	−48V	BLACK	RED	RED
	0V	GREY		BLACK
	GROUND	DRAIN		COMMON DRAIN
2	−48V	BLACK	GREEN	GREEN
	0V	GREY		WHITE
	GROUND	DRAIN		COMMON DRAIN
3	−48V	BLACK	BLUE	BLUE
	0V	GREY		ORANGE
	GROUND	DRAIN		COMMON DRAIN

POWER

RRH NO.	REF HOOK UP	SIDE A WIRE COLOR	SIDE A CABLE DESIGNATOR	SIDE B WIRE COLOR
4	−48V	BLACK	RED 2X BANDS	RED
	0V	GREY		BLACK
	GROUND	DRAIN		COMMON DRAIN
5	−48V	BLACK	GREEN 2X BANDS	GREEN
	0V	GREY		WHITE
	GROUND	DRAIN		COMMON DRAIN
6	−48V	BLACK	BLUE 2X BANDS	BLUE
	0V	GREY		ORANGE
	GROUND	DRAIN		COMMON DRAIN

1 / A-3 MLE HYBRID CABLE (6 POWER/12 FIBER)
NTS

ENGINEER

NB+C ENGINEERING SERVICES, LLC.
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PROFESSIONAL STAMP

COMMONWEALTH OF VIRGINIA
SASSAN ZARABI
Lic. No. 049689
PROFESSIONAL ENGINEER

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ENGINEER

SASSAN ZARABI, P.E.
VA PROFESSIONAL ENGINEER LIC. #049689

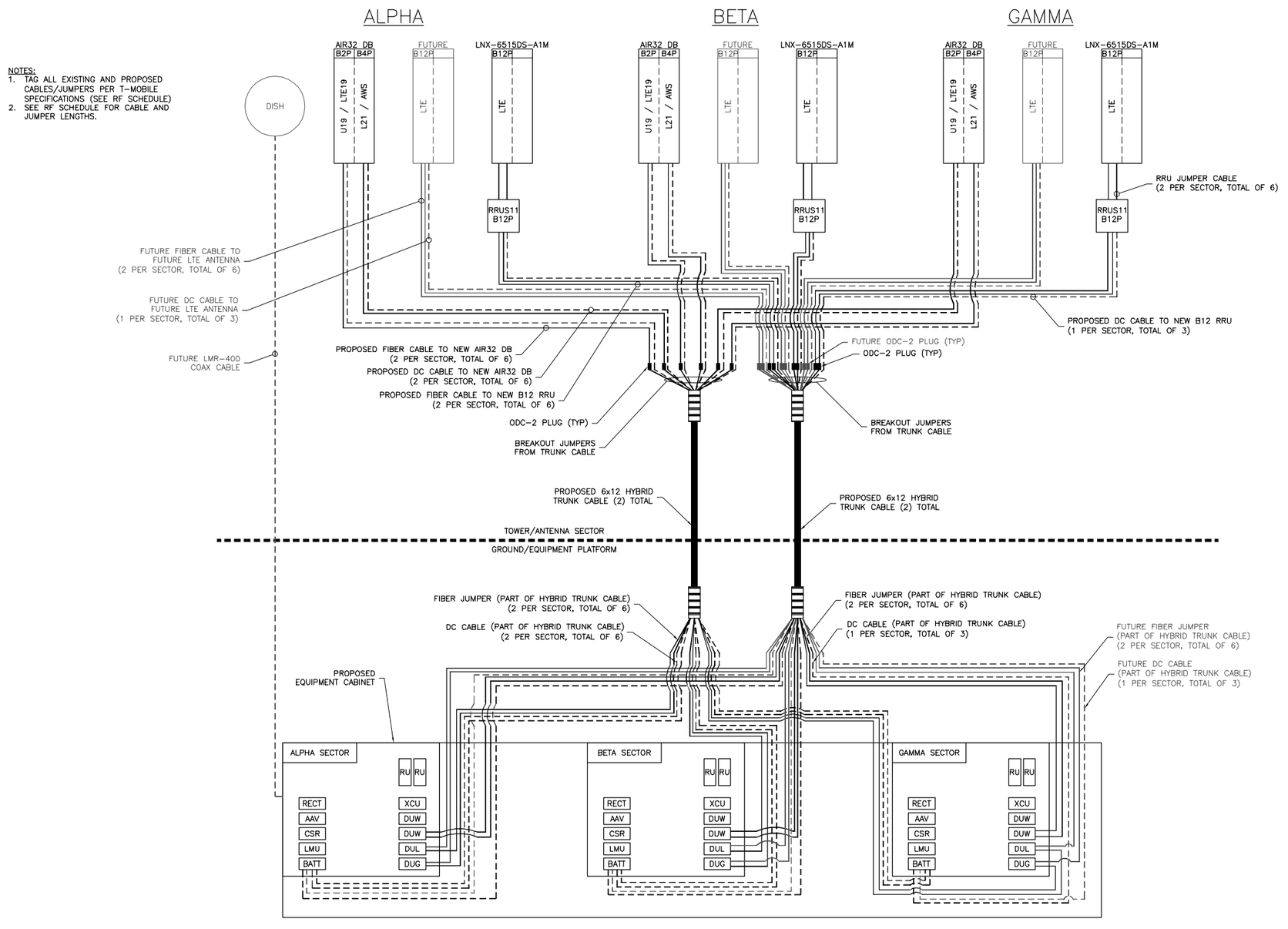
SHEET TITLE

CABLING DETAIL & ANTENNA CONFIGURATIONS

SHEET NUMBER

A-3

NOTES:
1. TAG ALL EXISTING AND PROPOSED CABLES/JUMPERS PER T-MOBILE SPECIFICATIONS (SEE RF SCHEDULE)
2. SEE RF SCHEDULE FOR CABLE AND JUMPER LENGTHS.



1 / A-4 ANTENNA & CABLING SCHEMATIC
NTS

ENGINEER

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ENGINEER

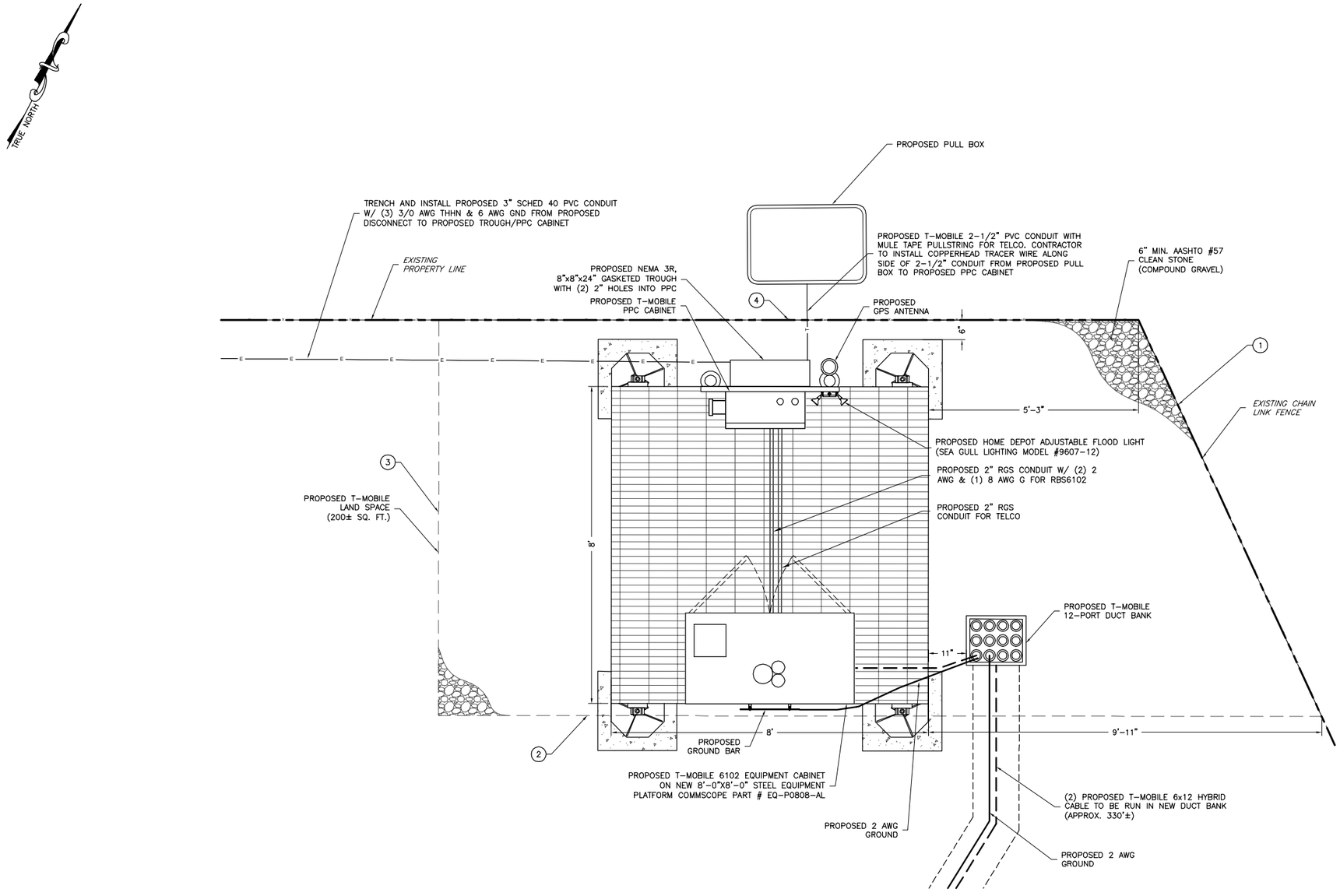
SASSAN ZARABI, P.E.
VA PROFESSIONAL ENGINEER LIC. #049689

SHEET TITLE

RF PLUMBING DIAGRAM

SHEET NUMBER

A-4



1 / D-1 EQUIPMENT LAYOUT PLAN

3/4" = 1'-0"

GRAPHIC SCALE

1 0 1 2 3 4 5

(IN FEET)

3/4 inch = 1 ft.

(SCALE BASED ON FULL SIZE 24"x36" SHEETS ONLY)
(DO NOT USE SCALE ON OTHER SIZED DRAWINGS)

T-MOBILE LEASED SPACE DIMENSION/BEARING INFORMATION		
LINE	BEARING	DISTANCE
L1	S35°41'24"W	11.02'
L2	N29°30'41"W	22.62'
L3	N60°29'19"E	10.00'
L4	S29°30'41"E	18.00'

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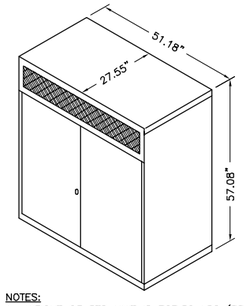
SHEET TITLE

EQUIPMENT LAYOUT PLAN

SHEET NUMBER

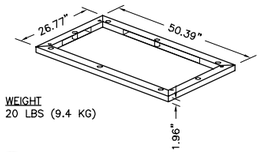
D-1



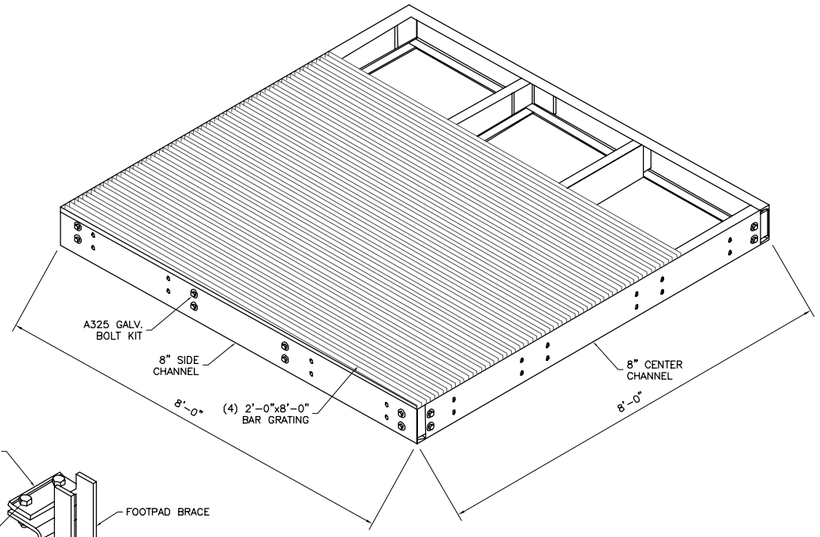
NOTES:
1. WEIGHT OF BTS UNIT IS 727.52 LBS (330 KG) (WEIGHT IS WITHOUT BATTERIES).
2. BASE FRAME NOT SHOWN

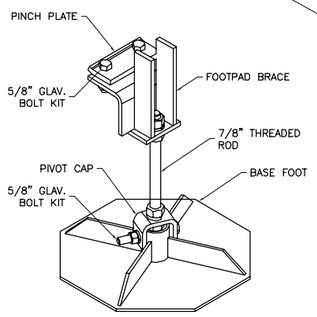
1 / A-2 RBS 6102 DETAIL
NTS

NOTES:
1. ADAPTER FRAME IS USED WHEN INSTALLING AN RBS 6102 ON A PREVIOUS RBS 2000 OR 3000 SITE.
2. GBF 9250 (PREVIOUS RBS 2000 OR 3000 BASEFRAME OR BBU 9500i).

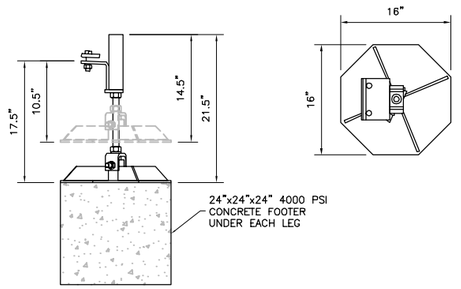


2 / A-2 RBS 6102 ADAPTER FRAME
NTS

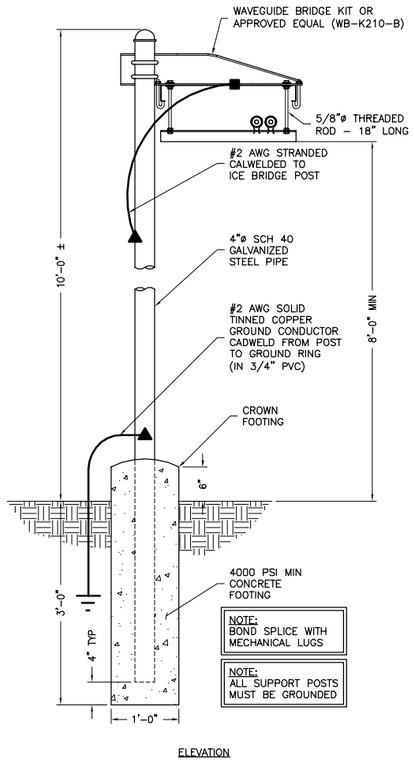




COMMSCOPE ADJUSTABLE LEG KIT FOR EQ-P SERIES DETAILS

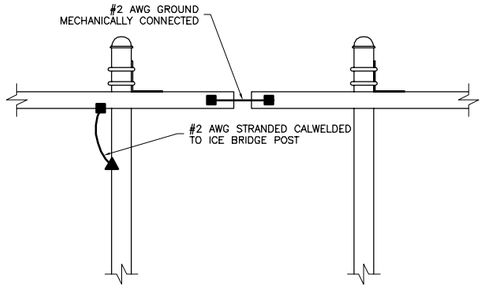


3 / D-2 COMMSCOPE PART # EQ-P0808-AL PLATFORM DETAIL
NTS

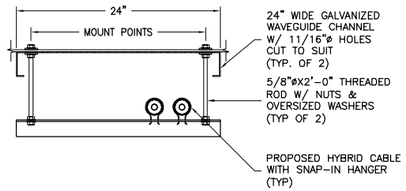


ELEVATION

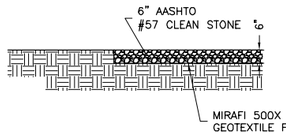
4 / D-2 CABLE BRIDGE DETAIL
NTS



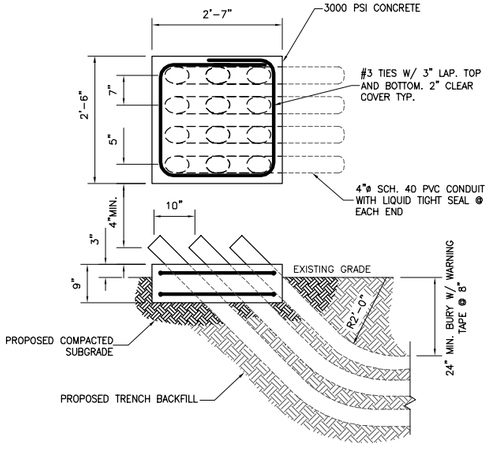
SIDE VIEW



5 / D-2 CABLE SUPPORT SECTION
NTS



6 / D-2 GRAVEL COMPOUND DETAII
NTS



7 / D-2 DUCTBANK & TRENCHING DETAIL
NTS

ENGINEER

NB+C ENGINEERING SERVICES, LLC.
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ENGINEER

SASSAN ZARABI, P.E.
VA PROFESSIONAL ENGINEER LIC. #049689

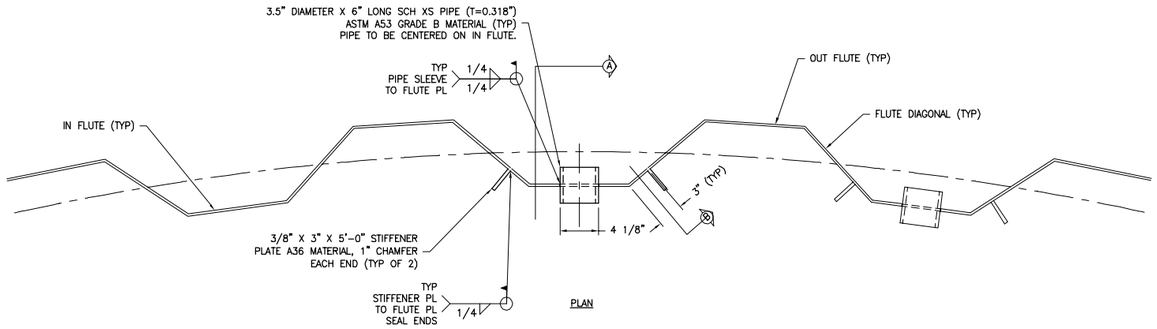
SHEET TITLE

EQUIPMENT SPECIFICATIONS & DETAILS

SHEET NUMBER

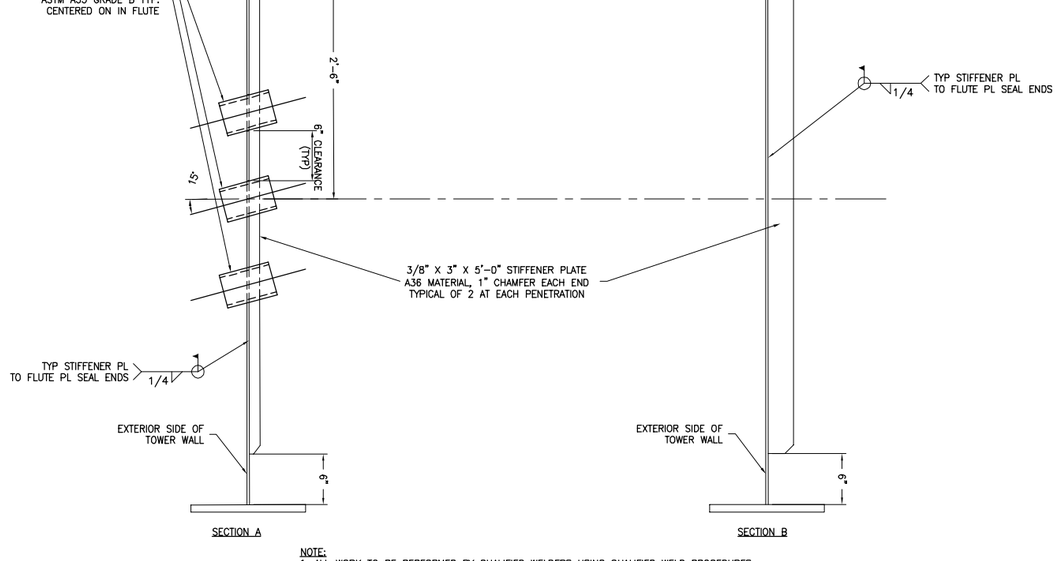
D-2

NOTE: ALL PIPE SLEEVES AND STIFFENERS SHALL BE LOCATED AND WELDED AS SHOWN.



STEPS FOR INSTALLATION OF PENETRATION SLEEVES:

1. INSTALL 2 STIFFENER PLATES (3/8" X 3" X 5'-0" PL)
2. CUT A SINGLE HOLE IN THE FUTURE PLATE, MAINTAIN 1/16" GAP BETWEEN SLEEVE AND HOLE IN FLUTE PLATE.
3. INSTALL PIPE SLEEVE AND COMPLETE WELDING.
4. REPEAT STEPS 2 AND 3 UNTIL ALL THREE PIPE SLEEVES HAVE BEEN INSTALLED.
5. REPAIR DAMAGED COATING.



NOTE:
1. ALL WORK TO BE PERFORMED BY QUALIFIED WELDERS USING QUALIFIED WELD PROCEDURES.
2. ALL NEW STIFFENERS SHALL BE 6" CLEAR OF ANY EXISTING PENETRATIONS OR EXISTING STIFFENERS.
3. ALL NEW PENETRATION WELDS AND STIFFENER WELDS MUST BE 6" CLEAR OF ANY HORIZONTAL WELD SEAMS THAT JOIN FLUTE PLATES.
4. DO NOT CUT THROUGH ANY EXISTING WELD SEAMS.

1 / D-3 TOWER PENETRATION DETAILS
NTS

STRUCTURAL NOTES

1. DESIGN REQUIREMENTS PER INTERNATIONAL BUILDING CODE 2012 AND THE EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED BY FIELD MEASUREMENT AND FROM THE EXISTING STRUCTURAL DRAWINGS. THE GENERAL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH CONSTRUCTION.
3. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS – ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN INCLUDING THE COMMENTARY AND THE AISC CODE FOR STANDARD PRACTICE.
4. STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM A992. ALL STRUCTURAL STEEL PIPES SHALL CONFORM TO ASTM A53 GRADE B. ALL STRUCTURAL STEEL COMPONENTS AND FABRICATED ASSEMBLIES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
5. WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODE – STEEL WELD ELECTRODES SHALL BE E70XX.
6. ALL COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE AS SPECIFIED BY THE OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL FURNISH ALL CONNECTION HARDWARE REQUIRED TO SECURE THE CABLES. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.
7. ALL THREADED STRUCTURAL FASTENERS FOR ANTENNA SUPPORT ASSEMBLIES SHALL CONFORM TO ASTM A307 OR ASTM A36. ALL STRUCTURAL FASTENERS FOR STRUCTURAL STEEL FRAMING SHALL CONFORM TO ASTM A325. FASTENERS SHALL BE 5/8" MIN. DIAMETER BEARING TYPE CONNECTIONS WITH THREADS INCLUDED IN THE SHEAR PLANE. ALL EXPOSED FASTENERS, NUTS AND WASHERS SHALL BE GALVANIZED UNLESS OTHERWISE NOTED. CONCRETE EXPANSION ANCHORS SHALL BE HILTI KWIK BOLTS UNLESS OTHERWISE NOTED.
8. NORTH ARROW SHOWN ON PLANS REFERS TO TRUE NORTH. CONTRACTOR SHALL VERIFY TRUE NORTH AND INFORM CONSTRUCTION MANAGER OF ANY DISCREPANCY BEFORE STARTING CONSTRUCTION.

STRUCTURAL NOTES

1. DESIGN INFORMATION

1.1 CODES

A. DESIGN CONFORMS TO VIRGINIA UNIFORM STATEWIDE BUILDING CODE INCORPORATING THE INTERNATIONAL BUILDING CODE 2012.

B. ASCE 7-10, MIN. DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

C. AISC 360-10, SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS AND THE MANUAL OF STEEL CONSTRUCTION, ALLOWABLE STRESS DESIGN, 14TH EDITION.

1.3 MISCELLANEOUS

A. CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS PRIOR TO PROCEEDING WITH THE WORK. NOTIFY ENGINEER FOR SUPPLEMENTAL REVIEW & RECOMMENDATIONS IF THE EXISTING CONDITIONS DO NOT PERMIT INSTALLATION OF THE WORK IN ACCORDANCE WITH THE PLANS AND DETAILS SHOWN.

2. STRUCTURAL STEEL

2.1 MATERIALS

A.	STRUCTURAL STEEL: W SHAPES	ASTM A992,
	MISC. ANGLE, PLATE, AND ROD	ASTM A36
	HSS (TUBES)	ASTM A500, GRADE B, Fy=46KSI
	HSS PIPE	ASTM A500, GRADE B, Fy=42KSI
B.	BOLTS	ASTM A325 U.N.O.
C.	WELDING ELECTRODES	AWS A5.1 (E70XX)

D. STEEL CONSTRUCTION SHALL CONFORM TO AISC 360.10 "SPECIFICATION FOR STRUCTURAL STEEL FOR BUILDINGS".

E. WELDING SHALL CONFORM TO AWS D1.1 "STRUCTURAL WELDING CODE".

F. THE FABRICATOR SHALL FURNISH CHECKED SHOP AND ERECTION DRAWINGS TO THE ENGINEER, AND OBTAIN APPROVAL PRIOR TO FABRICATING ANY STRUCTURAL STEEL. SHOP DRAWINGS SHALL CONFORM TO AISC "DETAILING FOR STEEL CONSTRUCTION".

2.2 CONNECTIONS

A. SHOP CONNECTIONS MAY BE BOLTED OR WELDED.

B. FIELD CONNECTIONS SHALL BE BOLTED WITH A325-N BOLTS, (INSTALLED SNUG TIGHT), WITH HARDENED WASHERS UNLESS OTHERWISE SPECIFIED OR IF WELDED CONNECTIONS ARE NOTED ON DRAWINGS.

C. CONNECTIONS NOT SHOWN ON DRAWINGS SHALL BE DESIGNED BY THE STEEL FABRICATOR. CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" AND AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".

D. DO NOT FIELD CUT OR ALTER STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL OF ENGINEER.

E. HOLES IN STEEL SHALL BE DRILLED OR PUNCHED. ALL SLOTTED HOLES SHALL BE PROVIDED WITH SMOOTH EDGES. BURNING OF HOLES AND TOUCH CUTTING AT THE SITE IS NOT PERMITTED. ALL HOLES IN BEARING PLATES SHALL BE DRILLED.

2.3 FINISHES

A. ALL STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123.

B. BOLTS, NUTS, FASTENERS AND HARDWARE SHALL BE HOT DIP GALVANIZED PER ASTM A153.

C. ALL SURFACES DAMAGED BY FIELD WELDING OR CUTTING SHALL BE PAINTED WITH ZINC RICH PAINTS COMPLYING WITH ASTM A780.

ENGINEER

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SITE INFORMATION

7WAW369A
MONCURE WT
77 STAFFORDBORO BLVD
STAFFORD, VA 22556
STAFFORD COUNTY

DESIGN RECORD

REVISIONS

REV	DATE	DESCRIPTION	BY
1	08/12/16	REVISED DESIGN	RNC
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PROFESSIONAL STAMP

COMMONWEALTH OF VIRGINIA
SASSAN ZARABI
Lic. No. 049689
PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 049689, EXPIRATION DATE 12312057

ENGINEER

SASSAN ZARABI, P.E.
VA PROFESSIONAL ENGINEER LIC. #049689

SHEET TITLE

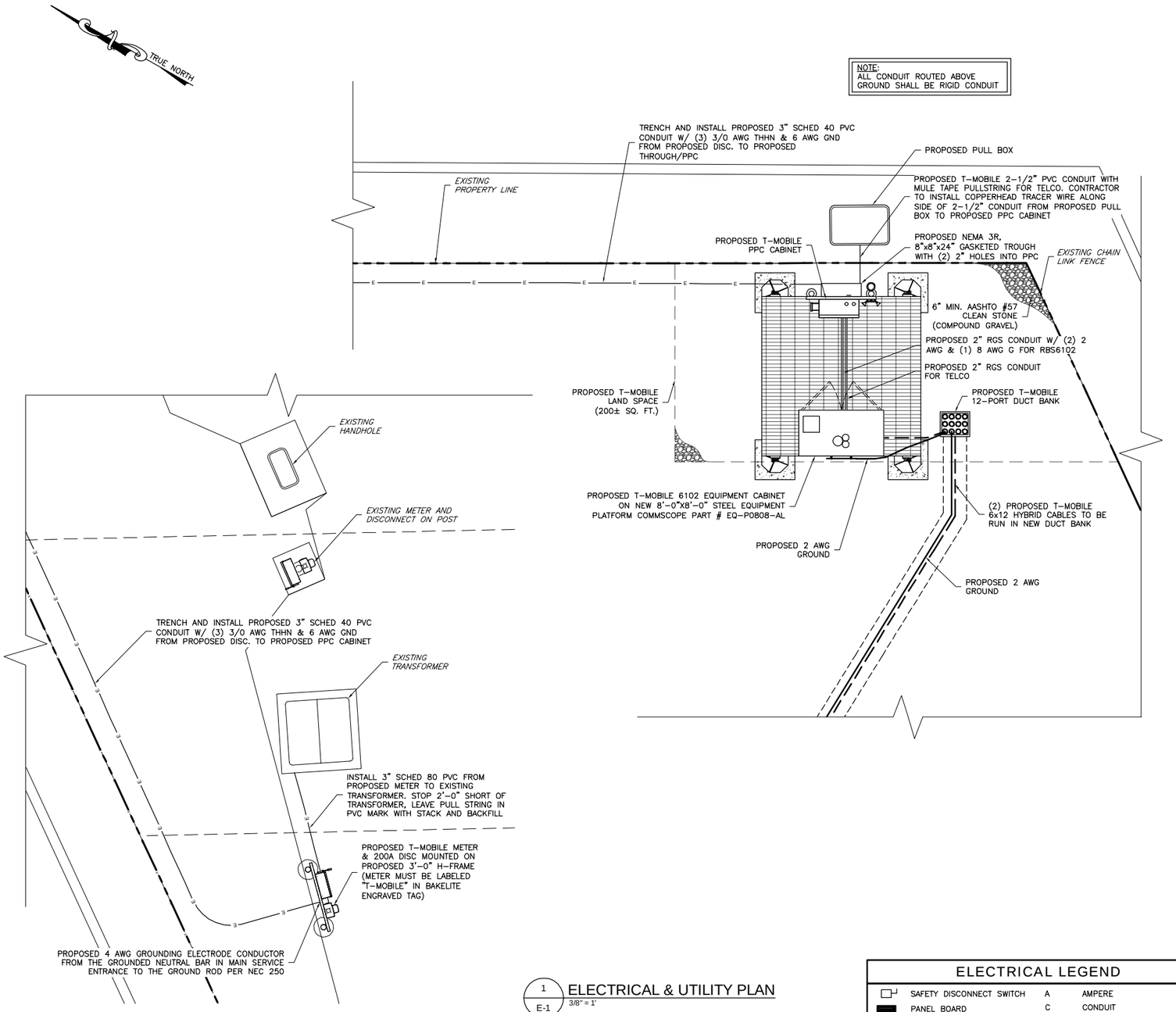
TOWER PENETRATION DETAILS

SHEET NUMBER

D-3

ELECTRICAL NOTES

1. SUBMITTAL OF BID INDICATES THAT THE CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
2. CONTRACTOR SHALL PERFORM ALL VERIFICATIONS, OBSERVATION TESTS, AND EXAMINATION WORK PRIOR TO ORDERING OF ANY EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE PROJECT MANAGER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
3. VERIFY HEIGHTS WITH PROJECT MANAGER PRIOR TO INSTALLATION.
4. THESE PLANS ARE DIAGRAMMATIC ONLY, FOLLOW AS CLOSELY AS POSSIBLE.
5. CONTRACTOR SHALL COORDINATE ALL WORK BETWEEN TRADES AND ALL OTHER SCHEDULING AND PROVISIONARY CIRCUMSTANCES SURROUNDING THE PROJECT.
6. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR COMPLETE AND FUNCTIONALLY OPERATING SYSTEMS ENERGIZED AND READY FOR USE THROUGHOUT AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
7. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. ELECTRICAL MATERIALS SHALL BE LISTED AND APPROVED BY UNDERWRITER'S LABORATORIES AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF ALL GOVERNING BODIES HAVING JURISDICTION OVER THE CONSTRUCTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH ALL CURRENT APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NBFU. ALL MATERIALS AND EQUIPMENT SHALL BE APPROVED FOR THEIR INTENDED USE AND LOCATION.
8. ALL WORK SHALL COMPLY WITH ALL APPLICABLE GOVERNING STATE, COUNTY AND CITY CODES AND OSHA, NFPA, NEC & ASHRAE REQUIREMENTS.
9. ENTIRE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE. ALL WORK, MATERIAL AND EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
10. PROPERLY SEAL ALL PENETRATIONS. PROVIDE UL LISTED FIRE-STOPS WHERE PENETRATIONS ARE MADE THROUGH FIRE-RATED ASSEMBLIES. WATER-TIGHT USING SILICONE SEALANT.
11. LOCATE ALL PENETRATIONS SUCH THAT ALL REINFORCEMENT CONTAINED WITHIN THE EXISTING BUILDING CONSTRUCTION REMAINS INTACT AND UNDISTURBED. SUBMIT LOCATING METHOD TO THE PROJECT MANAGER FOR APPROVAL PRIOR TO EXECUTION.
12. DELIVER ALL BROCHURES, OPERATING MANUALS, CATALOGS AND SHOP DRAWINGS TO THE PROJECT MANAGER AT JOB COMPLETION. PROVIDE MAINTENANCE MANUALS FOR MECHANICAL EQUIPMENT. AFFIX MAINTENANCE LABELS TO MECHANICAL EQUIPMENT.
13. ALL CONDUCTORS SHALL BE COPPER. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG., UNLESS OTHERWISE NOTED. CONDUCTORS SHALL BE TYPE THHW, RATED IN ACCORDANCE WITH NEC 110-14(C).
14. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THE MAXIMUM INTERRUPTING CURRENT TO WHICH THEY MAY BE SUBJECTED.
15. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE; ARTICLES 250 & 810 AND THE UTILITY COMPANY STANDARDS.
16. CONDUIT: ALL ABOVE GRADE CONDUITS SHALL BE RIGID & LFMC TO 6' AS STATED BELOW
    - A. RIGID CONDUIT SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS, IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAPPED WRAPPED WITH HUNTS WRAP PROCESS NO. 3.
    - B. ELECTRICAL METALLIC TUBING SHALL HAVE U.L. LABEL, FITTINGS SHALL BE GLAND RING COMPRESSION TYPE. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
    - C. LIQUID-TIGHT FLEXIBLE METAL CONDUIT SHALL BE U.L. LISTED AND SHALL BE USED AT FINAL CONNECTIONS TO MECHANICAL EQUIPMENT & RECTIFIERS AND WHERE PERMITTED BY CODE. ALL CONDUIT IN EXCESS OF SIX FEET IN LENGTH SHALL CONTAIN A FULL-SIZE GROUND CONDUCTOR.
    - D. CONDUIT RUNS SHALL BE SURFACE MOUNTED ON CEILINGS OR WALLS UNLESS NOTED OTHERWISE. ALL CONDUIT SHALL RUN PARALLEL OR PERPENDICULAR TO WALLS, FLOOR, CEILING, OR BEAMS. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH THE PROJECT MANAGER PRIOR TO INSTALLING.
    - E. PVC CONDUIT MAY BE PROVIDED ONLY WHERE SHOWN, OR IN UNDERGROUND INSTALLATIONS. PROVIDE UV-RESISTANT CONDUIT WHERE EXPOSED TO THE ATMOSPHERE. PROVIDE GROUND CONDUCTOR IN ALL PVC RUNS; EXCEPT WHERE PERMITTED BY CODE TO OMIT.
17. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PHENOLIC PLASTIC NAMEPLATES. PPC, METER, DISCONNECT, RAC35, PBC05, AND HF JUNCTION BOX. BACKGROUND SHALL BE BLACK WITH WHITE LETTERS; EXCEPT AS REQUIRED BY CODE TO FOLLOW A DIFFERENT SCHEME.
18. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO PROJECT MANAGER. GROUNDING SYSTEM RESISTANCE SHALL NOT EXCEED 5 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY THE PROJECT MANAGER FOR FURTHER INSTRUCTION ON METHODS FOR REDUCING THE RESISTANCE VALUE.
19. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION. LEGALLY DISPOSE OF ALL REMOVED, UNUSED AND EXCESS MATERIAL GENERATED BY THE WORK OF THIS CONTRACT. DELIVER ITEMS INDICATED ON THE DRAWINGS TO THE OWNER IN GOOD CONDITION. OBTAIN SIGNED RECEIPT UPON DELIVERY.
20. COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS SHALL BE PAID BY THE CONTRACTOR.
21. VERIFY ALL EXISTING CIRCUITRY PRIOR TO REMOVAL AND NEW WORK. MAINTAIN POWER TO ALL OTHER AREAS & CIRCUITS NOT SCHEDULED FOR REMOVAL.
22. RED LINED AS-BUILT PLANS SHALL BE PROVIDED TO THE CONSTRUCTION MANAGER.



1 / E-1 ELECTRICAL & UTILITY PLAN
3/8" = 1'

GRAPHIC SCALE
0 1 2 4 6 8 10
(IN FEET)
3/8 inch = 1 ft.
(SCALE BASED ON FULL SIZE 24"x36" SHEETS ONLY)
(DO NOT USE SCALE ON OTHER SIZED DRAWINGS)

ELECTRICAL LEGEND

	SAFETY DISCONNECT SWITCH	A	AMPERE
	PANEL BOARD	C	CONDUIT
M	KILOWATT HOUR METER	EMT	ELECTRICAL METALLIC TUBING
T	TRANSFORMER	G	GROUND
	CIRCUIT BREAKER	GFI	GROUND FAULT INTERRUPTING
	MANUAL TRANSFER SWITCH	KWH	KILOWATT HOUR
		MCB	MAIN CIRCUIT BREAKER
	AC GENERATOR CONNECTOR	P	POLE
	WEATHERPROOF GFI DUPLEX RECEPTACLE	SW	SWITCH
E	ELECTRICAL WIRING	V	VOLT
T	TELCO WIRING	W	WIRE

ENGINEER

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ENGINEER

SASSAN ZARABI, P.E.
VA PROFESSIONAL ENGINEER LIC. #049689

SHEET TITLE

ELECTRICAL & UTILITY PLAN

SHEET NUMBER

E-1

PANEL CIRCUIT AND LOAD SCHEDULE

120/240 VAC 1ø 200 AMP SERVICE SUPPLIED & INSTALLED BY SITE ELECTRICAL CONTRACTOR

#6 — 3/0 — 200A — S G — S N

SERVICE: 120/240 VAC
DESIGNATION: T-MOBILE PPC
LOCATION: T-MOBILE H-FRAME

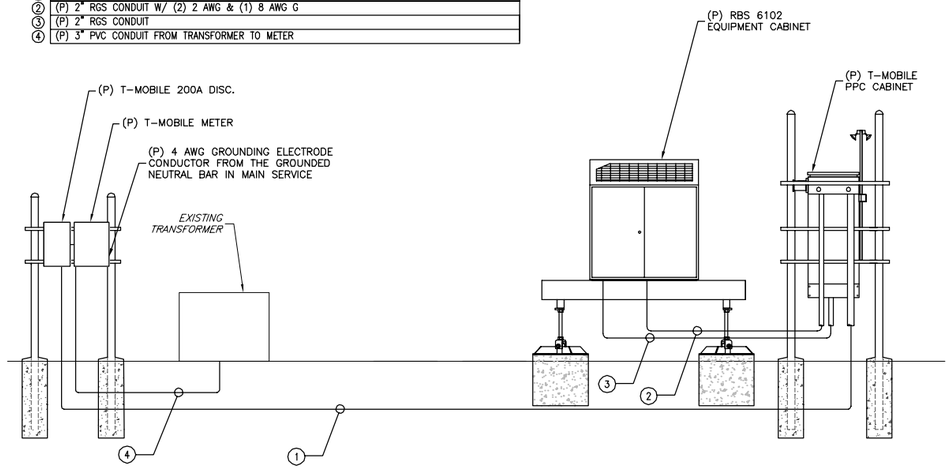
LOAD DESCRIPTION	QTY.	UNIT V.A.	LOAD PER PHASE (VA) A	LOAD PER PHASE (VA) B	LOADS CONTINUOUS	LOADS NON-CONTINUOUS	TRIP	POLES	WIRE SIZE	A.I.C.	WIRE TYPE		WIRE TYPE	A.I.C.	WIRE SIZE	POLES	TRIP	LOADS NON-CONTINUOUS	LOADS CONTINUOUS	LOAD PER PHASE (VA) A	LOAD PER PHASE (VA) B	UNIT V.A.	QTY.	LOAD DESCRIPTION	
1 SURGE ARRESTOR	1	–	–		X		60	2	4	10,000	THHN		THHN	10,000	12	1	20	X		435		435	1	FLOOD LIGHT	2
3 SURGE ARRESTOR	1	–		–	X		60	2	4	10,000	THHN		THHN	10,000	12	1	15	X			180	180	1	GFI RECEPTACLE	4
5 T-MOBILE EQUIPMENT CABINET (RBS 6102)	1	9,600	9,600		X		100	2	2	10,000	THHN		THHN	10,000	12	1	10	X		180		180	1	FAN	6
7 T-MOBILE EQUIPMENT CABINET (RBS 6102)	1	9,600		9,600	X		100	2	2	10,000	THHN		THHN	10,000							–	–	–	SPACE	8
9 SPACE	–	–	–							10,000	THHN		THHN	10,000						–		–	–	SPACE	10
11 SPACE	–	–		–						10,000	THHN		THHN	10,000							–	–	–	SPACE	12
13 SPACE	–	–	–							10,000	THHN		THHN	10,000						–		–	–	SPACE	14
15 SPACE	–	–		–						10,000	THHN		THHN	10,000							–	–	–	SPACE	16
17 SPACE	–	–	–							10,000	THHN		THHN	10,000						–		–	–	SPACE	18
19 SPACE	–	–		–						10,000	THHN		THHN	10,000							–	–	–	SPACE	20
21 SPACE	–	–	–							10,000	THHN		THHN	10,000						–		–	–	SPACE	22
23 SPACE	–	–		–						10,000	THHN		THHN	10,000							–	–	–	SPACE	24
	SUBTOTAL CONTINUOUS		9,600	9,600																–	–	SUBTOTAL CONTINUOUS		TOTAL KVA CONTINUOUS	19.20
	SUBTOTAL NON-CONTINUOUS		–	–																615	180	SUBTOTAL NON-CONTINUOUS		TOTAL KVA NON-CONTINUOUS	0.80
																								TOTAL KVA	20.00
																								TOTAL AMPS	83.30

VOLTAGE: 120/240 | CYCLE: 60 | PHASE: 1 | WIRE: 3
NEUTRAL: 200 AMPS
MAIN BREAKER: 200 AMP FRAME | A.I.C.: 10,000 | TRIP: 200 AMPS
MAIN LUGS: AMPS | MAIN COPPER BUS: 200 AMPS
MAINS: TOP [X] BOTTOM [ ]

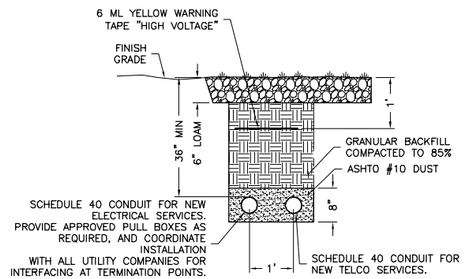
MANUFACTURER: TRANSTECTOR
MODEL NUMBER: TTOR-200-24-CC-08
NO EQUAL: [ ] APPROVED EQUAL: [X]
MOUNTING: SURFACE: [X] FLUSH: [ ]

1 / E-2 ELECTRICAL PANEL
NTS

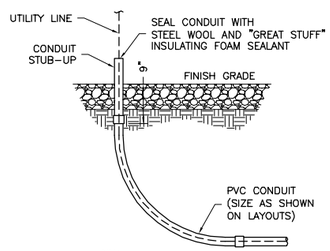
CONDUIT SCHEDULE
① (P) 3" PVC CONDUIT W/ (3) 3/0 & 6 AWG G FROM NEW DISCONNECT SWITCH TO PPC CABINET
② (P) 2" RGS CONDUIT W/ (2) 2 AWG & (1) 8 AWG G
③ (P) 2" RGS CONDUIT
④ (P) 3" PVC CONDUIT FROM TRANSFORMER TO METER



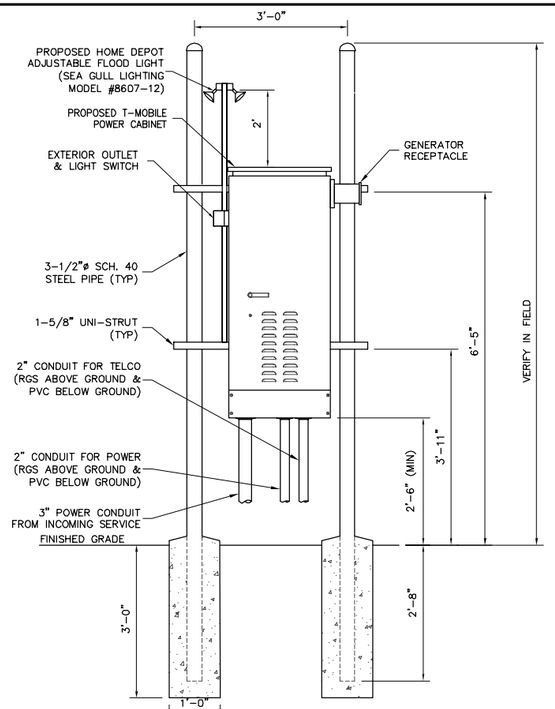
3 / E-2 POWER DIAGRAM
NTS



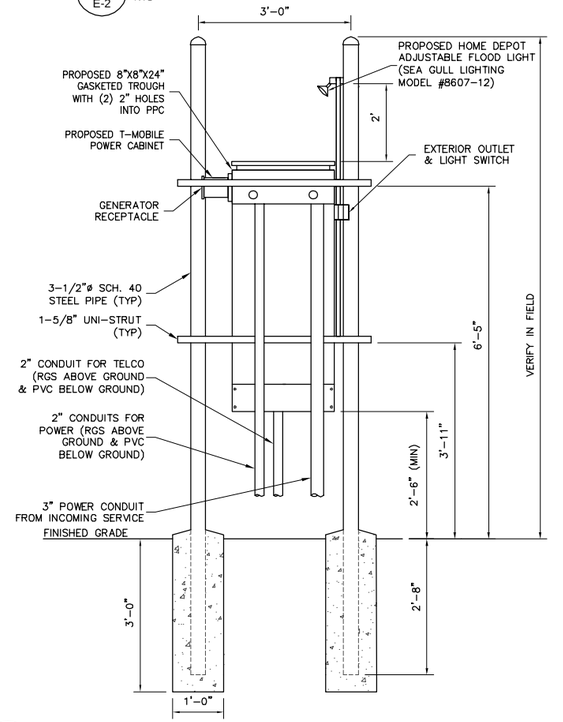
4 / E-2 UTILITY TRENCH DETAIL
NTS



5 / E-2 CONDUIT STUB-UP DETAI
NTS



2 / E-2 PPC CABINET W/ FLOOD LIGHT DETAIL
NTS



6 / E-2 PPC CABINET W/ FLOOD LIGHT DETAIL (BACKSIDE VIEW)
NTS

ENGINEER

NB+C ENGINEERING SERVICES, LLC.
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ENGINEER

SASSAN ZARABI, P.E.
VA PROFESSIONAL ENGINEER LIC. #049689

SHEET TITLE

ELECTRIC PANEL & DETAILS

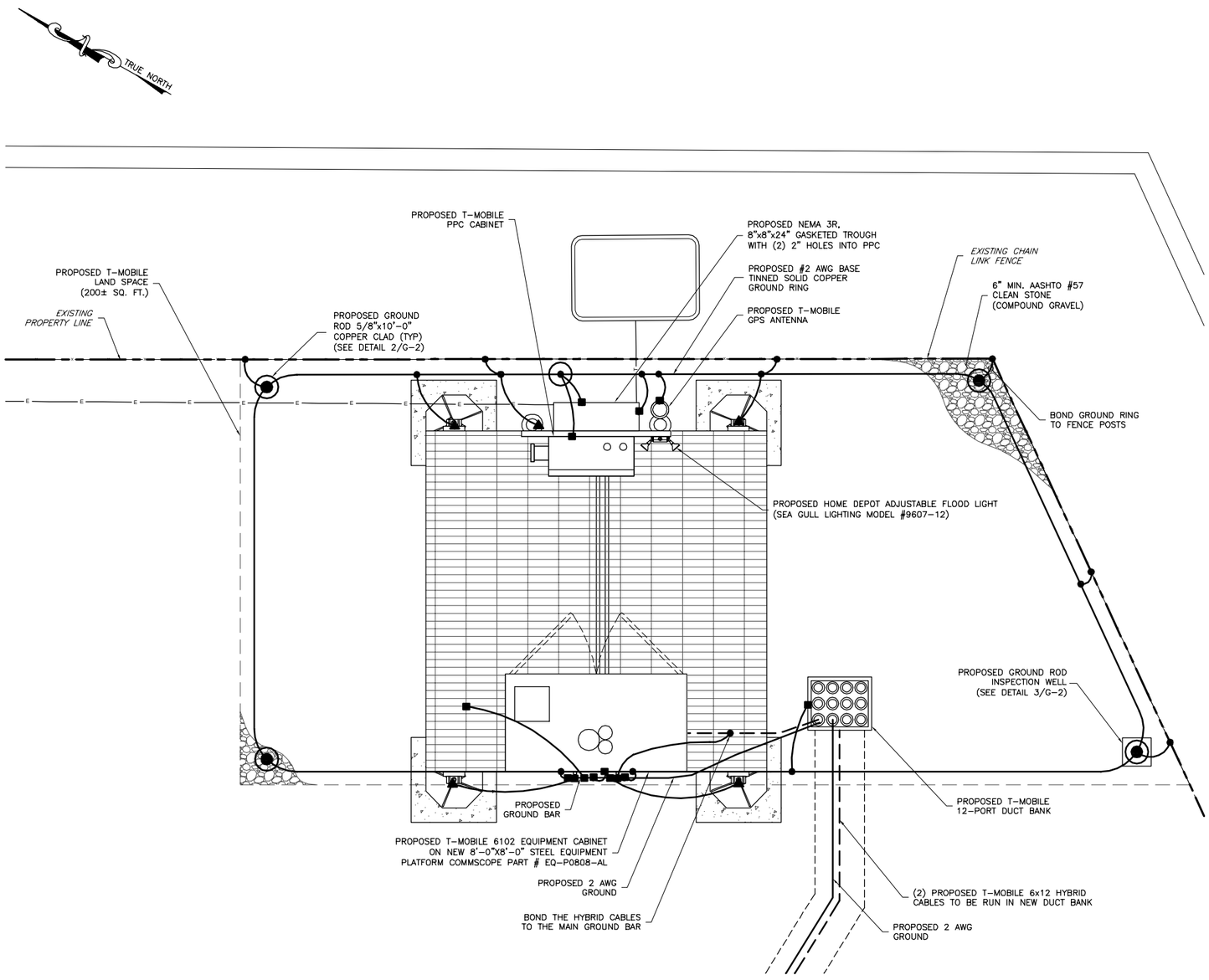
SHEET NUMBER

E-2

GROUNDING NOTES:

1. GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
2. ALL GROUNDING DEVICES SHALL BE U.L. APPROVED OR LISTED FOR THEIR INTENDED USE.
3. ALL WIRES SHALL BE AWG THHN/THWN COPPER UNLESS NOTED OTHERWISE.
4. GROUNDING CONNECTIONS TO GROUND RODS, GROUND RING WIRE, TOWER BASE AND FENCE POSTS SHALL BE EXOTHERMIC ("CADWELDS") UNLESS NOTED OTHERWISE. CLEAN SURFACES TO SHINY METAL. WHERE GROUND WIRES ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZING PAINT.
5. GROUNDING CONNECTIONS TO GROUND BARS ARE TO BE TWO-HOLE BRASS MECHANICAL CONNECTORS WITH STAINLESS STEEL HARDWARE (INCLUDING SCREW SET) CLEAN GROUND BAR TO SHINY METAL. AFTER MECHANICAL CONNECTION, TREAT WITH PROTECTIVE ANTIOXIDANT COATING.
6. GROUND COAXIAL CABLE SHIELDS AT BOTH ENDS WITH MANUFACTURER'S GROUNDING KITS.
7. ROUTE GROUNDING CONDUCTORS THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 12" RADIUS.
8. INSTALL #2 AWG GREEN-INSULATED STRANDED WIRE FOR ABOVE GRADE GROUNDING AND #2 BARE TINNED COPPER WIRE FOR BELOW GRADE GROUNDING UNLESS OTHERWISE NOTED.
9. REFER TO GROUNDING PLAN FOR GROUND BAR LOCATIONS. GROUNDING CONNECTIONS SHALL BE EXOTHERMIC TYPE ("CADWELDS") TO ANTENNA MOUNTS AND GROUND RING. REMAINING GROUNDING CONNECTIONS SHALL BE COMPRESSION FITTINGS. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO-HOLE LUGS.
10. THE GROUND ELECTRODE SYSTEM SHALL CONSIST OF DRIVEN GROUND RODS POSITION ACCORDING TO GROUNDING PLAN. THE GROUND RODS SHALL BE 5/8"X10'-0" COPPER CLAD STEEL INTERCONNECTED WITH #2 BARE TINNED COPPER WIRE BURIED 36" BELOW GRADE. BURY GROUND RODS A MAXIMUM OF 15' APART, AND A MINIMUM OF 8' APART.
11. IF ROCK IS ENCOUNTERED GROUND RODS SHALL BE PLACED AT AN OBLIQUE ANGLE NOT TO EXCEED 45'.
12. EXOTHERMIC WELDS SHALL BE MADE IN ACCORDANCE WITH ERICO PRODUCTS BULLETIN A-AT.
13. CONSTRUCTION OF GROUND RING AND CONNECTIONS TO EXISTING GROUND RING SYSTEM SHALL BE DOCUMENTED WITH PHOTOGRAPHS PRIOR TO BACKFILLING SITE. PROVIDE PHOTOS TO THE METROPCS CONSTRUCTION MANAGER.
14. GROUND RING & CONNECTIONS TO IT SHALL BE #2 AWG SOLID BARE TINNED COPPER WIRE. EQUIPMENT GROUND CONNECTIONS TO MGB SHALL BE #2 AWG STRANDED TO WIRE.
15. PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETTS KOPR-SHIELD (TM OF JET LUBE INC.). PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR EQUAL.
16. ENGAGE AN INDEPENDENT ELECTRICAL TESTING FIRM TO TEST AND VERIFY THAT IMPEDANCE DOES NOT EXCEED FIVE OHMS TO GROUND BY MEANS OF "FALL OF POTENTIAL TEST". TEST SHALL BE WITNESSED BY A METROPCS REPRESENTATIVE, AND RECORDED ON THE "GROUND RESISTANCE TEST" FORM.
17. WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN 3/4" PVC SLEEVE, FROM 1' BELOW GRADE AND SEAL TOP WITH SILICONE MATERIAL.
18. PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-OXIDIZATION PAINT.
19. ANY SITE WHERE THE EQUIPMENT (BTS, CABLE BRIDGE, PPC, GENERATOR, ETC.) IS LOCATED WITHIN 6 FEET OF METAL FENCING, THE GROUND RING SHALL BE BONDED TO THE NEAREST FENCE POST USING (3) RUNS OF #2 BARE TINNED COPPER WIRE.
20. TOWER BASE BUSS BAR REQUIRES (2) SOLID LEADS CADWELD TO THE BUSS BAR.
21. MAIN EQUIPMENT BUSS BAR REQUIRES (2) SOLID LEADS CADWELD TO IT AND TO THE GROUND RING.
22. ALL SOLID LEADS TERMINATED TO EITHER A BUSS BAR OR EQUIPMENT SHALL BE PROTECTED WITH CARFLEX.
23. ALL SOLID GROUND LEADS NOT BEING USED SHALL BE COILED UP (PIGTAILS) FOR FUTURE USE AS NEEDED.

NOTE: ALL TOWER TOP GROUNDS ARE STRANDED ONLY. ALL BELOW GRADE GROUNDS ARE SOLID.



1 / G-1 PARTIAL GROUNDING PLAN
SCALE: 3/4" = 1'

GRAPHIC SCALE
1 0 1 2 3 4 8
(IN FEET)
3/4 inch = 1 ft.
(SCALE BASED ON FULL SIZE 24"x36" SHEETS ONLY)
(DO NOT USE SCALE ON OTHER SIZED DRAWINGS)

GROUNDING LEGEND

▨	COAXIAL CABLE SHIELD GROUND KIT CONNECTION
▲	CALDWELD CONNECTION
■	COMPRESSION FITTING CONNECTION
●	EXOTHERMIC WELD CONNECTION
◉	5/8"X10' COPPER-CLAD STEEL GROUND ROD
◉	5/8"X10' COPPER-CLAD STEEL GROUND ROD WITH INSPECTION WELL
———	PROPOSED GROUND WIRING
- - - - - -	EXISTING GROUND WIRING
▭	TINNED COPPER GROUND BAR 1/4"X4"X12" OR 1/4"X4"X20"
CGB	COLLECTOR GROUND BAR
MGB	MAIN GROUND BAR

ENGINEER

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SITE INFORMATION

7WAW369A
MONCURE WT
77 STAFFORDBORO BLVD
STAFFORD, VA 22556
STAFFORD COUNTY

DESIGN RECORD

REVISIONS

REV	DATE	DESCRIPTION	BY
1	08/12/16	REVISED DESIGN	RNC
0	07/27/16	FINAL	JTD

PROFESSIONAL STAMP

COMMONWEALTH OF VIRGINIA
SASSAN ZARABI
Lic. No. 049689
PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF VIRGINIA, LICENSE NO. 049689, EXPIRATION DATE 12/31/2017

ENGINEER

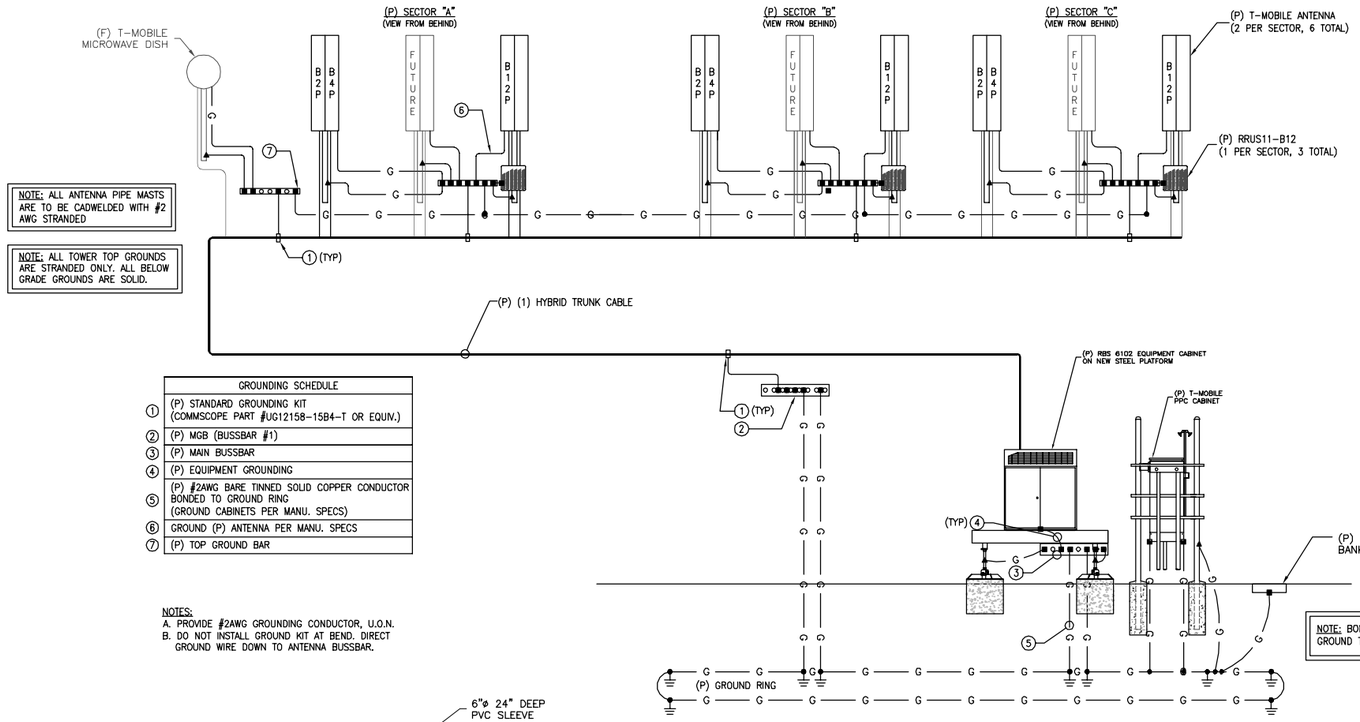
SASSAN ZARABI, P.E.
VA PROFESSIONAL ENGINEER LIC. #049689

SHEET TITLE

PARTIAL GROUNDING PLAN

SHEET NUMBER

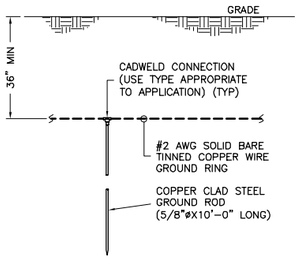
G-1



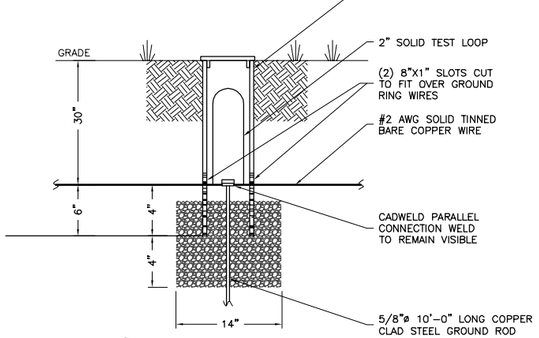
GROUNDING SCHEDULE	
①	(P) STANDARD GROUNDING KIT (COMMSCOPE PART #UG12158-15B4-T OR EQUIV.)
②	(P) MGB (BUSSBAR #1)
③	(P) MAIN BUSSBAR
④	(P) EQUIPMENT GROUNDING
⑤	(P) #2AWG BARE TINNED SOLID COPPER CONDUCTOR BONDED TO GROUND RING (GROUND CABINETS PER MANU. SPECS)
⑥	GROUND (P) ANTENNA PER MANU. SPECS
⑦	(P) TOP GROUND BAR

NOTES:
A. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
B. DO NOT INSTALL GROUND KIT AT BEND. DIRECT GROUND WIRE DOWN TO ANTENNA BUSSBAR.

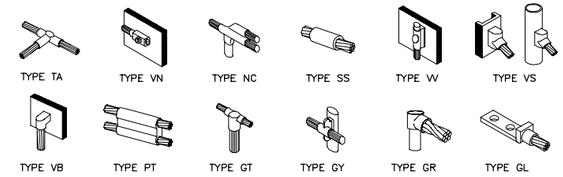
1 G-2 GROUNDING RISER DIAGRAM NTS



2 G-2 TYPICAL GROUND ROD DETAIL NTS



3 G-2 GROUND TEST WELL NTS



4 G-2 CADWELD GROUNDING CONNECTION DETAILS NTS

GROUNDING LEGEND

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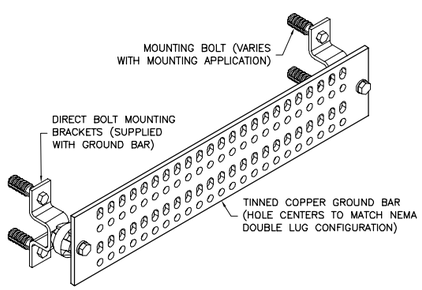
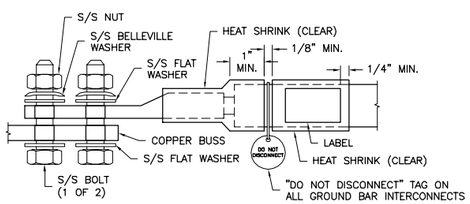
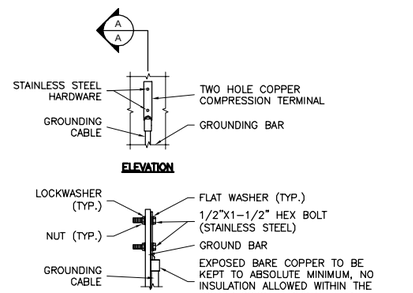


5 G-2 GROUND BAR DETAIL NTS



NOTES:
1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING BELLEVILLES. COAT ALL SURFACES WITH ANTI-OXIDATION COMPOUND BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH ANTI-OXIDATION COMPOUND.
3. COAT ALL BARRELS WITH ANTI-OXIDATION COMPOUND BEFORE CRIMPING.

6 G-2 GENERAL LUG DETAIL NTS



NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

7 G-2 TYPICAL GROUND BAR CONNECTION DETAIL NTS

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SHEET TITLE

GROUNDING DIAGRAM & DETAILS

SHEET NUMBER

G-2